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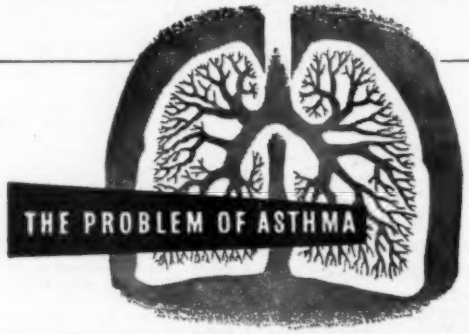

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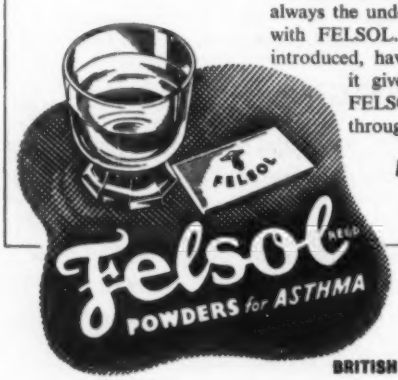

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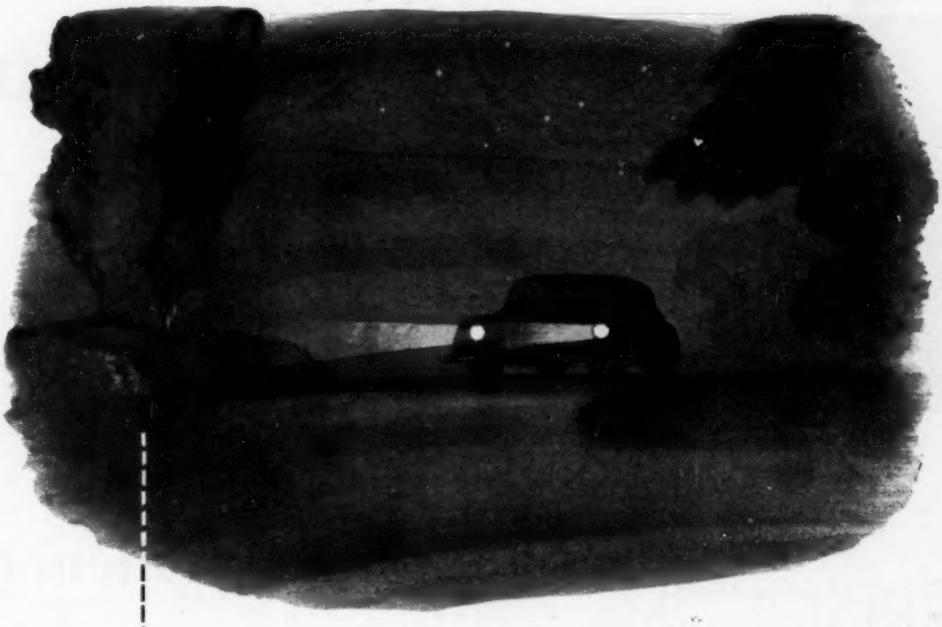

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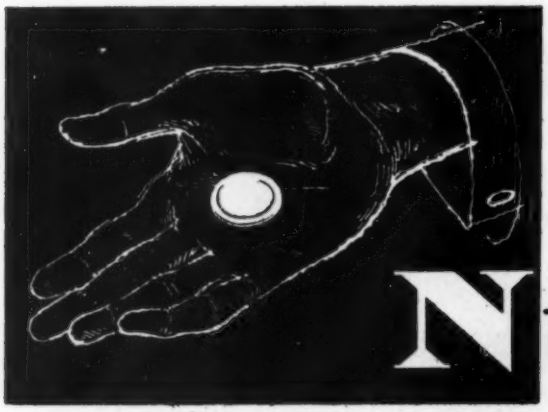

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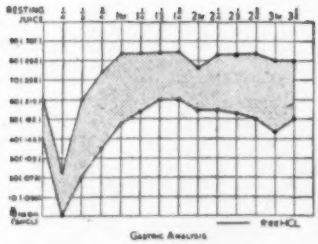
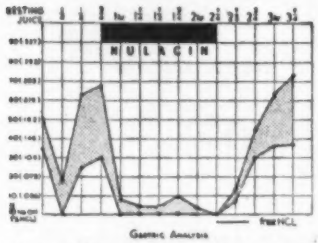


Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer



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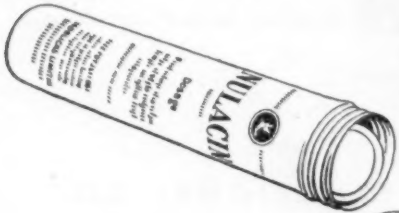

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Further Studies on the Reduction of Gastric Acidity. *Brit. Med. J.*, 23rd January 1954, 183-184
Clinical Investigation into the Action of Antacids. *The Practitioner*, July 1954, **173**:46

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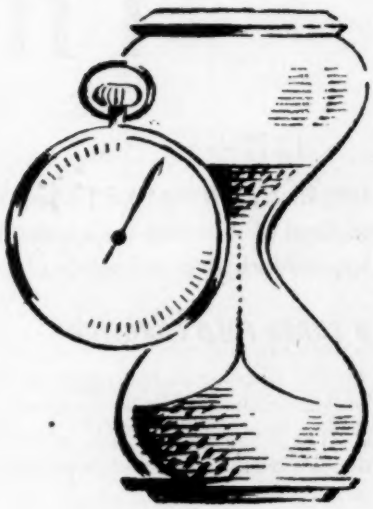

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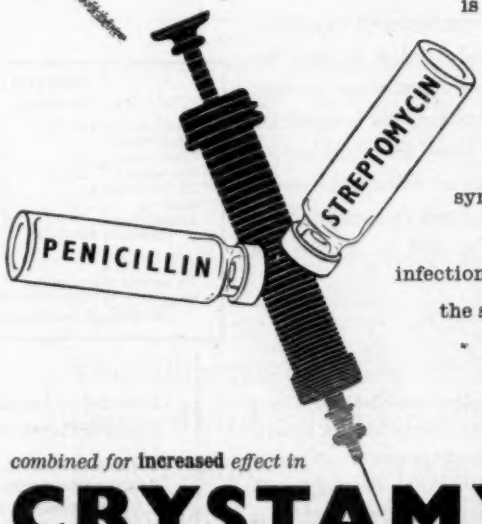

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1944 J. Amer. med. Ass., *126*, 752.

1944 J. ment. Sci., *90*, 95.

1948 Amer. J. Psychiat., 105, 2, 107.

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1954 Proc. Roy. Soc. Med., *47*, 215.

1954 J. Amer. med. Ass., *155*, 114.

1954 Brit. J. Addict., *51*, 29 & 39.

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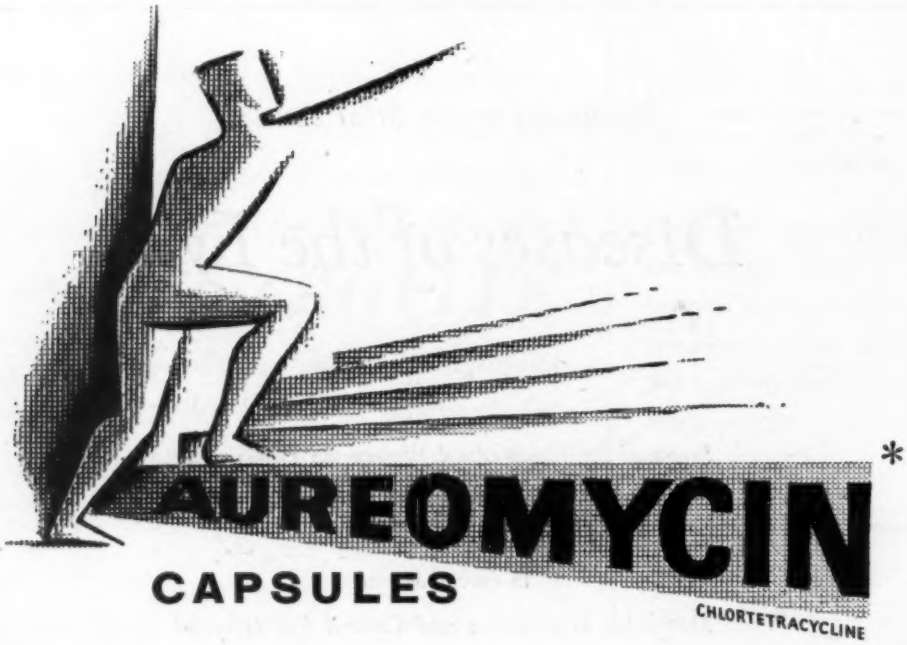

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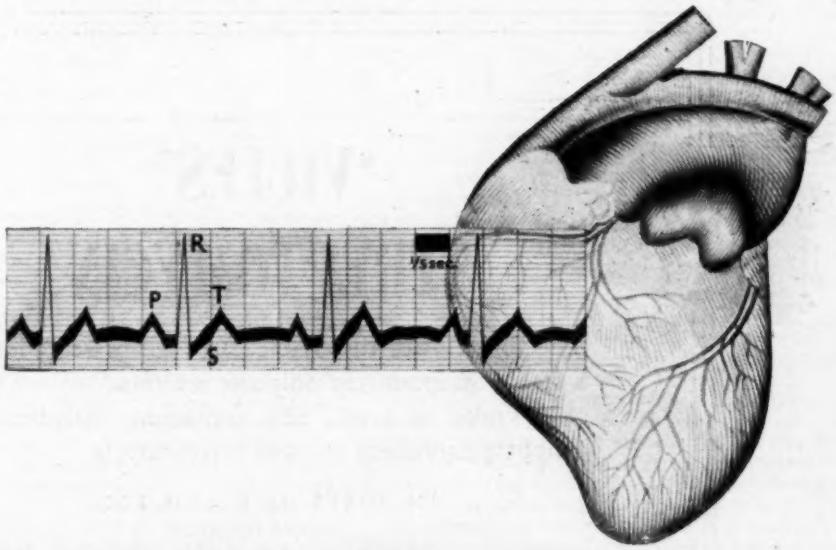

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THE DIAGNOSIS OF RHEUMATIC VALVULAR DISEASE

1924-1954 *

CRIGHTON BRAMWELL
M.A. Camb., M.D. Manc., F.R.C.P.

PROFESSOR EMERITUS OF THE UNIVERSITY OF MANCHESTER; CONSULTING PHYSICIAN TO THE MANCHESTER ROYAL INFIRMARY

NO-ONE, before or since, has contributed so much as Carey Coombs to our knowledge of the most important problem in cardiology—the diagnosis and treatment of rheumatic heart-disease. His book on the subject, published in 1924, gave an admirably clear and authoritative account of our views at that time. Since then, however, advances in radiology and in cardiac surgery, not to mention laboratory methods of investigation such as phonocardiography and cardiac catheterisation, have thrown much new light on the picture and have considerably modified our conception of valvular disease.

Thirty years ago most cardiologists believed that the mechanical effect of valvular lesions was unimportant, and that what really mattered was the condition of the myocardium. This was no new doctrine: it had been the teaching of George Balfour (1882) in Edinburgh and of Graham Steell (1906) in Manchester, not to mention James Mackenzie, whose work, during the twenty-five years he practised in Burnley, had convinced him that prognosis must be based on the patient's symptoms and not on the murmurs heard with the stethoscope. With that opinion I am sure we would all agree today; but what neither Mackenzie nor his contemporaries appreciated was that certain symptoms might be due to the purely mechanical effect of the valvular lesion.

Regarding mitral stenosis, Thomas Lewis wrote, in 1933: "Although many symptoms may be complained of by patients suffering from actual stenosis, there are none that can be ascribed properly and usefully to this deformity of the valve." Since those words were written—and they are the words of one who was not only a careful and accurate observer but also a lucid exponent of his views—we have learnt that, in these cases, the pulmonary congestion responsible for orthopnœa, for paroxysmal dyspnœa, and for acute pulmonary œdema is directly due to back-pressure from mitral obstruction, which can often be relieved by valvotomy, with immediate and remarkable benefit to the patient.

Hæmoptysis has long been recognised as a common symptom in mitral stenosis; but only in more recent years has the importance of acute pulmonary œdema, in this condition, been fully appreciated. We used to regard acute pulmonary œdema as a rare complication of mitral stenosis, but now we know that this is not so. It is in fact the most urgent indication for valvotomy. My attention was focused on this symptom in 1941 by two cases of mitral stenosis complicating pregnancy, both of which proved fatal. The post-mortem findings in these two patients (Bramwell and Jones 1944) were illuminating. During life, both had normal rhythm with a very loud crescendo presystolic murmur, and at necropsy both were found to have severe mitral stenosis with great hypertrophy of the wall of the left auricle. This combination suggested that the rheumatic process had hit the valve hard, but spared the muscle. Despite the extreme degree of stenosis, the hypertrophied auricle had for many years been able to maintain ventricular filling, when suddenly, under the strain of pregnancy, it failed, the lungs were flushed with blood, pulmonary œdema developed, and this rapidly proved fatal.

It is in cases such as these, with normal rhythm and a loud presystolic murmur, that pulmonary œdema is most likely. I believe the sequence of events, in such cases, is that a severe degree of mitral obstruction leads to a greatly increased left auricular pressure which, in its turn, calls forth a compensatory work-hypertrophy in the auricular wall. The powerful auricle ejects its contents with great force into the ventricle, and the increased pressure gradient at the mitral orifice manifests itself clinically by the characteristic loud crescendo presystolic murmur. Such hypertrophy occurs only when the auricular muscle is healthy; a damaged auricle, when subjected to strain, fibrillates.

Mitral Stenosis

THE MURMUR

Let me now refer to some of the physical signs associated with mitral obstruction, the most important of which is the characteristic murmur.

In the production of obstructive murmurs, two factors are concerned—the size of the orifice and the rate at which the blood is flowing through it. The one is static, the other dynamic. Further there is an inverse relation between the degree of stenosis and the velocity of the blood-flow required to produce such a murmur.

The influence of the dynamic factor is shown in fig. 1, which is an optical record of the heart sounds and murmurs in a patient with mitral stenosis and partial heart-block. When we first listened to this patient's heart we were puzzled by the way the sounds and murmurs varied from cycle to cycle. In the first cycle there is a loud first sound, but no murmur; in the second the first sound is less loud but is preceded by a mid-diastolic murmur with accentuation in auricular systole; and in the third cycle, where the ventricle failed to contract, there is a loud murmur but no first sound. The fourth cycle is similar to the first. The absence of the presystolic murmur in the first and the last cycles is explained by the fact that both followed a missed beat, and, during the prolonged diastole preceding these cycles, the auricle contracted twice. When it contracted the second time it was unable to force sufficient blood through the mitral orifice to produce a murmur, for the ventricle was already full. During the intermission, on the other hand, the auricle contracted early in diastole and discharged its contents with considerable velocity into the empty ventricle, producing a loud murmur. The variability of the murmur, in this case, was due entirely to the variation in the pressure gradient at the mitral orifice in different

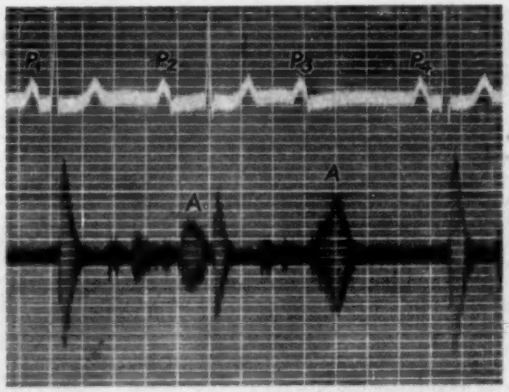

Fig. 1—Electrocardiogram and optical phonocardiogram from a patient with mitral stenosis and partial A-V block. (This figure, and the two following it, are reproduced from the *Quarterly Journal of Medicine* (1935, 4, 139) by courtesy of the Editors.)

* Carey Coombs lecture, delivered at the University of Bristol on Nov. 23, 1954.

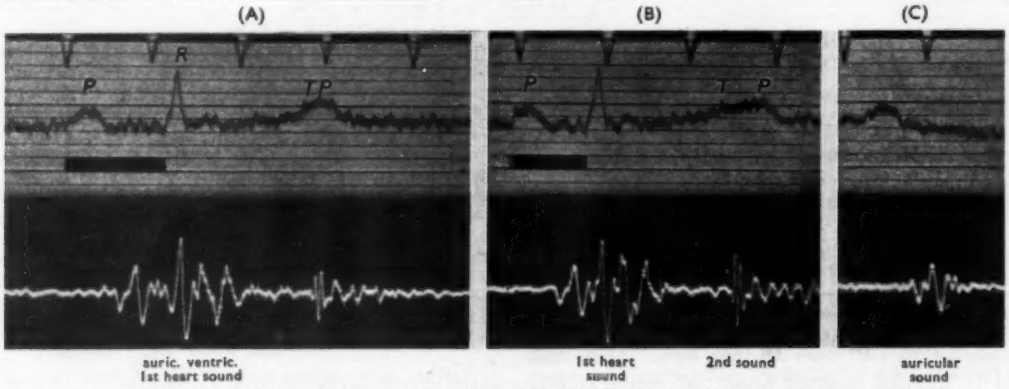

Fig. 2—Electrocardiogram and phonocardiogram from a patient with partial A-V block. (A) Cycle with prolonged P–R interval. (B) Cycle with normal P–R interval. (C) Cycle with isolated auricular contraction.

cycles, as determined by intraventricular pressure at the time the auricle contracted.

If the production of an obstructive murmur depends on the size of the orifice relative to the rate at which the blood is flowing through it, theoretically a murmur might be produced either by a narrowed orifice or by an increased blood-flow; and we do in fact find that, in subjects with a normal mitral orifice, when the cardiac output is increased by exercise, or when the heart is overactive, as in hyperthyroidism, the first heart sound bears a close resemblance to that of mitral stenosis (Bramwell 1943). There is, then, what we might call a physiological, as opposed to an anatomical, stenosis. This was clearly recognised by Carey Coombs, who stated that "A colourable imitation of a presystolic murmur is sometimes perpetrated by a normal heart acting fast."

Paul Wood (1950) has pointed out that the apical diastolic murmur heard in some patients with a patent ductus disappears when the ductus is tied. This murmur is indistinguishable from that of mitral stenosis and is obviously due to an increased blood-flow through a normal mitral orifice.

The reason for the crescendo character of the presystolic murmur has been a matter of some controversy. Personally I believe that it is due to the final vibrations of the murmur being superimposed on, and reinforced by, the initial vibrations of the first heart sound. In patients with partial heart-block, in cycles where the P–R interval is prolonged, the complete auricular complex (which is identical with the sound picture in isolated auricular beats) precedes the vibrations of the first heart sound; but, when the P–R interval is of normal length, only the initial vibrations of the auricular sound complex can be seen, the later vibrations being obscured by those of the first heart sound (fig. 2).

Likewise, in patients with mitral stenosis and auricular fibrillation, when two cycles follow one another in quick succession, the murmur completely fills diastole: it runs right up to the first heart sound, and, to the ear, has a crescendo character, like the auriculo-systolic murmur. But when diastole is longer there is a silent interval between the murmur and the succeeding first heart sound (fig. 3). Under these circumstances the murmur has no crescendo termination.

THE PULMONARY SECOND SOUND

In addition to the murmurs we have been considering, there are certain other important auscultatory signs of mitral stenosis. Let me refer first to accentuation and splitting of the pulmonary second sound.

Accentuation of the pulmonary second sound is generally attributed to increased pressure in the pulmonary circuit, but that this is not always the true explanation is shown by the fact that a loud second sound in the pulmonary area is sometimes heard in patients with pulmonary stenosis, in whom the pressure in the pulmonary artery is lower, not higher, than normal. The explanation, in such cases, is that the second sound is made up of two components, the one due to closure of the aortic and the other to closure of the pulmonary valve. The loud second sound in the pulmonary area, in patients with pulmonary stenosis, is due not to the pulmonary but to the aortic component. It is in fact not an accentuated pulmonary second sound that we hear, but an accentuated aortic second sound in the pulmonary area. Abrahams and Wood (1951) have shown that in severe pulmonary stenosis the pulmonary component of the second sound is absent.

In most healthy children and young adults, the two components can be clearly distinguished—that is to say, the second sound is split. Normally the aortic valve closes before the pulmonary, and in cases of mitral incompetence, owing to the shortening of left ventricular systole, the two components of the second sound are still more widely separated (Brigden and Leatham 1953). Conversely, in patients with left bundle-branch block, left ventricular systole is delayed and the pulmonary precedes the aortic component of the second sound (Wolferth and Margolies 1935).

The split second sound is always best heard in the pulmonary area, and in some cases cannot be heard elsewhere.

THE OPENING SNAP

"Reduplication" of the second sound at the apex has been recognised since the time of Bouillaud (1835) as an important sign of mitral stenosis. That the additional sound was produced at the mitral orifice, and was not due to asynchronous closure of the aortic and pulmonary valves, was appreciated by Potain who is said

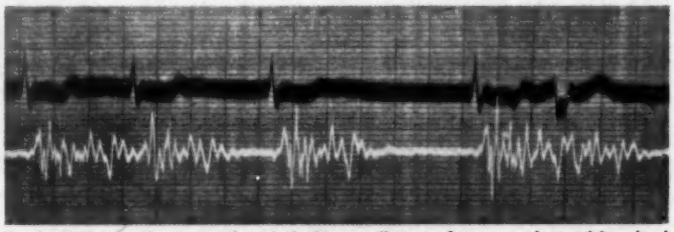

Fig. 3—Electrocardiogram and optical phonocardiogram from a patient with mitral stenosis and auricular fibrillation.

to have coined the term "claquement d'overture de la mitrale." Margolies and Wolferth (1932) were able, by graphic records, to differentiate this "opening snap" from the split second and from the third heart sound, and to show that it was synchronous with the opening of the mitral valve.

Clinically, it is generally possible to distinguish the opening snap from the physiological third heart sound (to which I shall refer later) by its character, site of maximal intensity, and timing. The opening snap is sharp and high-pitched, resembling in quality the second heart sound, whereas the third heart sound is longer and lower-pitched. The opening snap is usually loudest at a point between the apex and the left sternal border, or slightly higher up, while the third sound is best heard in the immediate vicinity of the apex. The opening snap usually occurs earlier in diastole than the physiological third heart sound, the average interval after the commencement of the second heart sound being, according to Mounsey (1953), 0·07 sec. and 0·20 sec. respectively. Unfortunately, as Wood (1954) has pointed out, in advanced mitral incompetence the third sound may become much more like an opening snap, in that it may be less delayed and much sharper and higher-pitched than usual.

Sellors and his colleagues (1953) believe that the "opening snap" is due to sudden tension of the mitral valve as it balloons upwards into the ventricle at the start of diastole, and consider that it is a reliable sign of severe mitral stenosis with a pliant diaphragmatic type of valve. It is absent when mitral regurgitation is predominant and when the valve is much calcified (Wynn 1953) and for these reasons it may be regarded as a favourable indication for valvotomy.

Likewise Sellors and his colleagues think that the characteristic snapping first sound (which they call the "closing snap") is due to sudden tension of the pliant mitral diaphragm as it bulges into the auricle at the beginning of systole. This closing snap can be palpated as well as heard. In the words of Carey Coombs, "The hand placed over the precordium feels the apex bang suddenly and sharply against the chest wall, then sink away from it as suddenly as it arrived."

THE THIRD HEART SOUND

In gallop rhythm, three instead of two heart sounds accompany each cardiac cycle, the additional sound being due to rapid distension of the ventricle. When the additional sound is synchronous with auricular systole, it is convenient to call it the fourth heart sound (Evans 1948) to distinguish it from the third heart sound which occurs early in diastole.

There are three types of gallop rhythm of clinical importance—protodiastolic, presystolic, and summation gallop (fig. 4). In protodiastolic gallop the additional sound is an accentuated third heart sound, in presystolic gallop it is the fourth heart sound, and in summation gallop it is a combination of the two; for, when the heart is beating quickly, auricular systole falls in early diastole, with the result that the third and fourth heart sounds coincide.

Presystolic and summation gallop do not concern us here, but protodiastolic gallop merits careful consideration, for it occurs in normal subjects as well as in patients with mitral disease.

Thayer (1908) found that a third heart sound was audible in 68% of healthy young persons. He also demonstrated, experimentally in dogs, a similar sound which corresponded in time to the sudden distension of the ventricle that occurred early in diastole, and he suggested that the third heart sound was due to the sudden rush of blood from auricle to ventricle, when the mitral valve first opens.

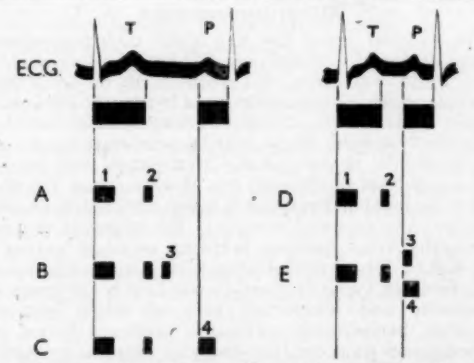

Fig. 4—Diagram to illustrate different types of gallop rhythm. (A and D) Normal rhythm. (B) Protodiastolic gallop. (C) Presystolic gallop. (E) Summation gallop. 1, 2, 3, 4, First, second, third, and fourth heart sounds. The large rectangles immediately below the electrocardiogram represent ventricular and auricular systole.

So many apparently healthy recruits were referred to me during the war by the Ministry of Labour and National Service, on account of a third heart sound, that I decided to investigate the matter. In a consecutive series of 832 recruits examined, a third heart sound at the apex was heard in 151. This series did not include any case in which a diastolic murmur could be heard or a presystolic could be elicited by exercise.

The incidence of the physiological third heart sound is greatest in young subjects. It was present in 43% of men under 20, but in only 10% of those over that age.

In mitral regurgitation, the rate of ventricular filling is increased. This favours the production of a third heart sound. Severe stenosis has the opposite effect. Hence, in patients with mitral disease, there is likely to be an opening snap but no third heart sound when stenosis predominates, but a third heart sound and no opening snap when incompetence is the dominant lesion.

I cannot leave this subject of mitral stenosis without referring to the murmur of pulmonary incompetence associated with the name of my old teacher, Graham Steell. Steell's (1888) original description of this murmur, which he called "the murmur of high pressure in the pulmonary artery," was a masterpiece of clinical observation. He drew attention especially to the variability of the murmur from day to day, and to its constant association with a greatly accentuated pulmonary second sound.

The Graham Steell murmur is now accepted by all cardiologists, but the same cannot be said of the Austin Flint (or, what a candidate I examined in Membership called the "Austin Reed" murmur! It wasn't till I asked him who Austin Reed was that I thought I could perceive a faint flicker of activity in a remote corner of his temporal lobe.).

The original description of this murmur (Flint 1862) was based on two cases of aortic incompetence in which an apical presystolic murmur had been audible during life, but no disease of the mitral valve was found at necropsy. Flint suggested that the regurgitant stream through the aortic orifice impinged on the aortic cusp of the mitral valve and brought the leaflets of the valve into apposition, causing a functional stenosis of the mitral orifice. Paul White (1926) put forward the alternative hypothesis that the murmur was due to relative stenosis of the mitral orifice following dilation of the left ventricle. Some workers, however, including Warburg (1946) and Luisada (1944), are doubtful whether such a murmur ever occurs, and Carey Coombs himself appears to have been of that opinion. He wrote: "In very few cases indeed does there seem to be incontrovertible evidence of the Flint hypothesis."

Mitral Incompetence

No valvular lesion has had quite such a chequered career as mitral incompetence. Those who served in the first world war were well acquainted with "V.D.H." (valvular disease of the heart) and "D.A.H." (disordered action of the heart). These two terms made cardiology delightfully simple. If you heard a murmur it was V.D.H.; if you didn't, it was D.A.H. Now V.D.H. was organic, but D.A.H. was functional; so, if a man had V.D.H. he had to be invalided out, but if it was only D.A.H. he could be cured and returned to duty! The diagnosis of V.D.H. was perhaps not quite so fantastic as might appear at first sight; for we were dealing with young men, and the only common types of heart-disease in this age-group are rheumatic and congenital, both of which generally manifest themselves by murmurs. Coronary disease and hypertension do occur, but they are exceedingly rare at this age. Where this diagnosis came to grief was the failure to recognise that heart murmurs might be due to causes other than valvular disease.

Graham Steell (1906) gave credit to his "master," George Balfour of Edinburgh, for being the first to point out that, in chronic "mitral disease" the condition found post mortem was commonly mitral stenosis, not structural damage to the valves producing incompetence without stenosis. Steell states that, at that time, the terms "mitral disease" and "mitral incompetence" were practically synonymous. Balfour (1882) had realised that mitral regurgitation was not necessarily due to a damaged valve, and had coined the term "curable mitral incompetence" for the systolic murmur heard in cases of chlorosis—a murmur which disappeared when the anæmia was successfully treated.

Steell himself emphasised the fact that muscle-contraction was an essential complement of the valvular apparatus. In his own words, "No mitral valve can be competent if it fails to receive that assistance from the heart-muscle it is designed to receive in the performance of its function." He added: "Such destruction of the mitral curtains as would alone cripple their function (without there being mitral stenosis) is almost limited to cases of septic endocarditis." To this last statement I shall refer again later.

Regarding this point, Carey Coombs wrote: "An apical systolic murmur is certainly an indication of mitral incompetence; but, unless the bruit be long, loud and high pitched, it does not prove that the incompetence is due to endocarditis . . . and it should be attributed to muscular rather than valvular disease."

Nevertheless in 1914 this lesson had not been driven home, and, in the first world war, many doctors had still to learn that a heart murmur did not necessarily mean valvular disease.

Between the two wars, the pendulum swung in the opposite direction—obviously too far. Some cardiologists of this period seemed to regard the diagnosis of "mitral incompetence" as hardly decent! Lewis (1933) wrote "There are no symptoms to be attributed to mitral regurgitation. The only sign that can be named is a systolic murmur." Cabot (1926), in his fascinating book *Facts on the Heart*, in which he correlates the clinical with the post-mortem findings, recognises that mitral incompetence may occur, but concludes that a diagnosis of mitral regurgitation without stenosis is never justified.

Freeman and Levine (1933), on the other hand, believed that loud apical systolic murmurs were generally due to mitral disease, and both Fishberg (1940) and Master (1948) held that the importance of apical systolic murmurs had been underestimated.

The successful intervention of the surgeon in the treatment of mitral stenosis gave a new lease of life to mitral incompetence; for, although rheumatic mitral incompetence without stenosis is rare, a combination of the two is common, and in assessing the suitability of a case for valvotomy it is important to know which is predominant.

We now base the diagnosis of mitral regurgitation chiefly on three signs: (1) a loud apical systolic murmur; (2) dilatation and hypertrophy of the left ventricle, which is recognised clinically by the heaving sustained apical impulse, and radiologically by the characteristic changes in the cardiac silhouette described by Parkinson (1949); and (3) expansile pulsation of the left auricle, synchronous with ventricular systole. This can be seen in the postero-anterior as well as in the right oblique position, and must be distinguished from backward displacement of the left auricle by a hypertrophied right ventricle, which may occur in pure mitral stenosis. This sign is not always present. Confirmatory evidence may be obtained from the pulse, which in mitral incompetence is of full volume as contrasted with the small-volume pulse of pure stenosis.

Nevertheless, as Baker and his colleagues (1952) have pointed out, despite these various diagnostic criteria, unsuspected free mitral regurgitation is occasionally revealed at operation.

Douglas and Hill (1954) compared the clinical assessment of mitral incompetence with the operative findings. In 26 cases in their series there was close agreement; in 5 cases mitral incompetence was suspected but pure stenosis was found at operation; while in 15 cases the degree of mitral incompetence was underestimated.

BACTERIAL ENDOCARDITIS

I have already referred to the association of pure mitral incompetence with bacterial endocarditis. This association is well recognised, but has never been satisfactorily explained. Of Brigden and Leatham's (1953) series of 30 cases of pure mitral incompetence, 10 had bacterial endocarditis; and of my own (Bramwell 1948) series of 12 cases of bacterial endocarditis with mitral disease that came to necropsy, mitral stenosis was present in only 2. So rarely does one hear a typical crescendo presystolic murmur in patients suffering from bacterial endocarditis, that its presence is sufficient to make one question the correctness of the diagnosis.

These facts cannot fail to raise in one's mind a doubt whether the orthodox view that subacute bacterial endocarditis rarely attacks a heart not previously damaged by rheumatic infection, or the seat of some congenital abnormality, is correct; for it is remarkable that the pre-existing heart-disease is almost always trivial, and that patients with advanced heart-disease appear to be relatively immune. For example, auricular fibrillation was present in only 5 of Cates and Christie's (1951) 269 cases. Likewise of the 33 patients in my first series, none gave a history of heart-failure before infection, and in only 3 had there been any considerable impairment of capacity for effort.

Some observations by Carey Coombs have an important bearing on this subject. In 1923 Coombs reported 30 cases of "endocarditis lenta" seen since the end of the first world war. He distinguished "endocarditis lenta" from the more acute type of bacterial endocarditis by the facts that it runs a course of many months or even years (one of his patients lived for over three years), that there is little or no fever, and that necropsy reveals anatomical evidence of stubborn opposition to the infection.

Of his 30 patients, 29 were males, of whom 22 had served in the Army, and of these 80% had been infantrymen or gunners, with an average period of service of more than three years, mostly in France. Coombs says that, with only one exception, they were "men of fine physique and morale, men who joined the army early, served with all their might, and exerted themselves to the utmost limit of their physical powers." By contrast, he did not encounter a single case among men of indiffer-

ent physique, whose service had been at the base and elsewhere, at home or overseas. He concludes that "So constant is the relation between physical fitness and strenuous exertion on the one hand, and proneness to endocardial infection on the other, that a belief in the causal relation between the two can hardly be avoided." He suggests that excessive fatigue from the strenuous exertion to which these men had been subjected may have predisposed the body to infection. It is indeed hard to believe that these men had any pre-existing valvular lesion.

Aortic Stenosis

Our views regarding the diagnosis of aortic stenosis have been profoundly modified in recent years.

SYMPTOMS

In 1933, Thomas Lewis wrote: "There are no symptoms of aortic stenosis." It is interesting to compare this statement with that of King nine years later (Bramwell and King 1942). He wrote:

"Patients with this condition are liable to the usual symptoms of cardiac disease and, in addition, they frequently show evidence of cerebral anæmia. Angina may occur. Sudden exertion is poorly borne and may be followed by sharp dyspnœa and syncope. When the heart begins to fail, the progress is usually persistently downhill, regardless of therapy. The disorder very often proves fatal during the sixth decade. In the later stages, mild mental symptoms are common: irritability, extreme drowsiness, and delusions."

It is surprising how many of these patients remain free from symptoms until the sixth or seventh decade, in spite of having led active lives. Not infrequently a murmur had been noted many years previously. This clinical picture, which has been well described by David Lewes (1951) does not seem to have been familiar to physicians in the past. Lewes's paper is based on 25 cases of calcareous "lone" aortic stenosis, verified post mortem (i.e., cases in which aortic stenosis was the only significant valvular lesion).

The age at which symptoms develop in these cases suggests that they are not directly due to the pre-existing valvular lesion, which may be of long standing, but rather to degenerative changes superimposed upon it, which have transformed it from a benign to a malignant condition, just as subacute bacterial endocarditis may be superimposed upon rheumatic mitral or aortic valvular disease.

The mechanism of syncope in these patients has not been finally established: it differs from ordinary vagal syncope in that it is usually associated with effort, and in this respect it resembles angina of effort. Moreover, Hammersten (1951) found that, in patients with severe aortic stenosis who developed syncope, cardiac pain was much more common than in those who did not. Likewise Kumpe and Bean (1948) found that sudden death in patients with aortic stenosis was most common in those who also experienced cardiac pain. This apparent association between syncope and sudden death on the one hand, and cardiac pain on the other, suggests that both may be due to the same cause—namely, myocardial ischæmia—a hypothesis which receives support from Hammersten's further observation that, of patients with aortic stenosis, those who develop syncope have larger hearts, and so would be more liable to ischæmia, than those who do not. Contratto and Levine (1937) have pointed out that, in these cases, cardiac pain may occur independently of aortic incompetence or coronary disease.

It has been shown by Tennant and Wiggers (1935), in dogs, that myocardial ischæmia leads to a diminished cardiac output, and Hammersten suggests accordingly that syncope may be due to cerebral anæmia resulting from a diminished cardiac output secondary to myocardial ischæmia.

PHYSICAL SIGNS

Regarding diagnosis, Thomas Lewis wrote:

"The outstanding diagnostic sign of aortic stenosis is a small pulse, rising slowly to a delayed summit: the condition should never be diagnosed without this sign. . . . The second sign is a systolic thrill at the base of the heart, usually maximal at the second right cartilage or space."

Our diagnostic criteria are now much less rigid than they were then, for Wiggers (1944) has shown that it is not until the aortic orifice is reduced to a quarter of its normal size that the form of the pulse is modified in the manner described by Lewis. It is therefore hardly surprising that this sign is present in less than half the cases. Even in severe stenosis, the pulse may be full and collapsing, and, in about half the cases, there is some associated aortic incompetence.

A loud harsh basal systolic murmur is the commonest sign in these cases; in fact it may be the only sign. The murmur, however, is not always loud; and, unless it is loud, there is no thrill. Moreover, the murmur is often well heard not only at the base but also at the apex and, occasionally, is loudest in that area, in which case it may not be easy to decide whether it is due to aortic stenosis or to mitral incompetence; for both lesions give rise to left ventricular enlargement, and in both the pulse may be of full volume. Under these circumstances, as Leatham (1951) and others have shown, the "shape" of the systolic murmur and its relation to the heart sounds, in the phonocardiogram, may be helpful in diagnosis. In aortic stenosis, the systolic murmur begins shortly after the first sound and rises to a maximum in mid-systole. It then diminishes rapidly, finishing well before the second sound. In mitral incompetence, on the other hand, the murmur fills the whole of systole, starting immediately after the first sound and continuing right up to the second sound, which may be obscured at the apex if the murmur is loud.

Absence of the aortic second sound, to which considerable importance in diagnosis has in the past been attached, is evidence of advanced stenosis; but, as Parkinson and Hartley (1946) pointed out, a normal second sound does not exclude that diagnosis.

Parkinson (1949), in his Carey Coombs lecture, emphasised the value of fluoroscopy in the diagnosis of this lesion. It reveals not only enlargement of the left ventricle but also calcification of the aortic valve. Tomography can also be used to demonstrate calcification (Davies and Steiner 1949). Calcification was present in 26 of the 32 cases reported by Contratto and Levine (1937).

Campbell and Kauntze (1953) did not find any constant relation in their cases between the intensity of the aortic second sound and calcification of the valve.

Another diagnostic feature in fluoroscopy, the importance of which has been emphasised by Kiloh (1950) and others, is prominence of the ascending aorta, best seen in the left oblique position.

ÆTIOLOGY

Regarding the ætiology of calcific aortic stenosis, opinion is still sharply divided. Karsner and Koletsky (1947), in their important monograph based on a series of 200 necropsy cases, came to the conclusion that the condition was almost always rheumatic. Many workers, however, have been strongly opposed to this view. Gallavardin (1909, 1921, 1936) suggested that the lesion was due to a non-specific infection producing endocarditis in early life. Kiloh (1950), in a paper based on 27 cases of aortic stenosis without incompetence, all under 50 years of age, was convinced that the condition could not be rheumatic. Gallavardin considers that rheumatic aortic stenosis is almost always associated with incompetence or with a mitral lesion. Carey Coombs also held this view. He wrote "All available evidence,

pathological as well as clinical, points to the extreme rarity of aortic stenosis as a result of rheumatic infection."

Rheumatic carditis generally leads to stenosis of the mitral valve, but to incompetence of the aortic valve, and I would suggest that the reason for this is purely anatomical: the cusps of the mitral valve spring from a continuous curtain; so, when cicatricial contraction follows inflammation, they tend to be drawn together; whereas the cusps of the aortic valve are discrete, and so tend to be drawn apart.

When calcification supervenes in a case of pure aortic stenosis, the valve may become incompetent; but, in rheumatic disease of the aortic valve, stenosis is secondary to incompetence.

The sex-incidence of calcific aortic stenosis (males being affected much more commonly than females), its benign course over a long period of years, the rarity of a history of rheumatic infection, and the fact that it is hardly ever associated with a mitral lesion, are all strongly opposed to the idea that the condition is rheumatic.

In a recent paper, Campbell and Kauntze (1953) point out the difficulty in arriving at a histological diagnosis in cases with scarred and calcareous aortic valves, and consider that the ætiology may be more accurately assessed from the history, progress, and physical signs than from necropsy material. They believe that pure aortic stenosis, under the age of 30, is more likely to be congenital than rheumatic. In 20 of their 40 cases, the heart murmur was noticed in early childhood, generally before the age of 4, and many of their cases were referred to them with a diagnosis of congenital heart-disease.

Campbell and Kauntze make the interesting observation that many of these patients, like patients with coarctation of the aorta, have outstandingly good physique.

Compared with the other three valvular lesions we have been considering, aortic incompetence has attracted very little attention during the past thirty years: in fact I think it would be true to say that Corrigan's (1832) original description of the clinical picture has scarcely been modified by subsequent work.

Conclusion

My aim here has been to review certain aspects of the changing picture of rheumatic valvular disease.

The remarkable advances which we have witnessed in cardiac surgery in recent years have aroused a new and lively interest in mitral stenosis, and improvements in phonocardiographic technique have enabled us to record with greater accuracy what we hear with the stethoscope. Just as electrocardiography, by depicting the various types of arrhythmia, enabled us to recognise them by the unaided senses, so phonocardiography is teaching us to distinguish, by auscultation, between the different sounds and murmurs heard in health and disease.

In the period between the two world wars, mitral incompetence was regarded by most cardiologists with remarkably little respect: since the introduction of mitral valvotomy, however, its importance has been universally recognised, though its clinical recognition is not yet always possible.

The radiological diagnosis of valvular calcification has widened our concept of aortic stenosis; but the ætiology of this condition, and the mechanism of production of some of the symptoms associated with it, are still undetermined.

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PULMONARY PRIMARY TUBERCULOSIS IN CHILDHOOD

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THE belief that the prospects of all children with healed primary tuberculosis are universally good has been questioned by Holmdahl (1950) in Scandinavia, and only a long-term follow-up will tell whether or not the same prognosis holds good for this country. This paper is the preliminary report of such a follow-up. Relevant publications by Bentley et al. (1954) and Holmdahl (1950) are accompanied by comprehensive bibliographies, which need not be repeated here extensively.

Material

The number of children examined in the present series was 767, comprising 719 examined in the tuberculosis outpatient clinic and in the wards of the Hospital for Sick Children, Great Ormond Street, and 48 seen at University College Hospital, London. This number does not represent all the Mantoux-positive children attending the hospitals but only those whose clinical picture suggested tuberculosis and who were radiographed because of this. Of these, 102 were considered to be no longer "active," judged by general condition, erythrocyte-sedimentation rate (E.S.R.), and radiological appearances. In 53 children the site of the primary complex could not be determined, and 34 showed evidence of non-pulmonary tuberculosis. These were all excluded from this analysis, leaving 578 cases in which there was adequate evidence of an active primary tuberculous complex in the lung when first examined. This unfortunately cannot be regarded as a truly random sample of patients with this condition,

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because there was, in the early days of streptomycin therapy, a high admission-rate of children with tuberculous meningitis, sometimes in the later stages. Some such children were admitted from other hospitals and others were referred by general practitioners and tuberculosis clinics or were diagnosed in the course of general medical outpatient work. It is realised also that hospitals of this kind of necessity see more "complicated" cases than a "contact" or tuberculosis chest clinic.

The number of cases included in each analysis varies according to the information available, the duration of follow-up, and the type of treatment. Any particular selection is explained in the appropriate section.

Complications of Primary Complex

Of the 578 cases 40 were omitted from this analysis because of inadequate documentation. Half of the remaining 538 children were followed up for two years or more, and rather less than a half of these are still under observation. About 20% (106) were followed for one or two years, and 12% for from six months to a year. This leaves only 18% of the children, who were followed up less than six months. They include, of course, most of the 55 who died; and, since relatively few others were followed up so short a time, the analysis given below of the complications which may follow the pulmonary primary complex must be fairly accurate (table I).

TABLE I—COMPLICATIONS IN 538 CHILDREN

Complication	Age at onset (yr.)			Total
	0–2 11/12	3–5 11/12	6–12	
Collapse, consolidation, &c.	96	98	66	260 (48·3%)
Local dissemination ..	12	7	6	25 (4·6%)
Proved bronchiectasis ..	1	5	5	11 (2·0%)
Pleural effusion ..	3	9	16	28 (5·2%)
Meningitis	19	16	6	41 (7·6%)
Meningitis and miliary tuberculosis	19	14	6	39 (7·2%)
Miliary tuberculosis only	13	5	4	22 (4·1%)
None	48	53	64	165 (30·7%)

Segmental Lesions

Most workers agree that the most common complication of the primary complex is the segmental lesion seen radiologically, yet the incidence of this finding varies widely in different reports. Macpherson and Lutwyche (1950) report a collapse incidence of 4·7%, Bentley et al. (1954) and Roberts and Blair (1950) 19%, and Thompson (1952) 28%. Such differences are not so surprising when one considers, for example, that Miss Macpherson's cases come from a contact clinic and Dr. Bentley's from a residential institution. One might expect the more severely complicated cases to be admitted for hospital treatment, and thus an unavoidable selection of cases is made.

It has been found also that the age of onset has some bearing on the frequency of collapse. Richards (1944) found that 21% of 239 children aged less than 6 years had collapse due to bronchial obstruction, and only 6·7% of children aged more than 6 years.

The other possible explanation for this discrepancy may be found in the interpretation of the radiological segmental shadow. Adler and Richards (1953) think that collapse and consolidation can be distinguished radiologically, but most workers find this distinction difficult if not impossible. What exactly is meant by such terms as "epituberculosis" and "flare" is uncertain, and the criteria for the selection of a specific lesion such as "collapse" are difficult to establish. Epituberculosis is a diagnosis we no longer recognise, and because of the confusion of nomenclature and difficulty of interpretation the remaining group of collapse, consolidation, and so-called hilar flare have been classified under one heading in the present series. It is fully realised that in some there must have been caseating pulmonary lesions as well, and this has been borne out by the later appearance of calcification in the lung parenchyma or by lobectomy specimens. On the other hand, the gradual freeing of an obstructed bronchus, confirmed by repeated bronchoscopy and a coincidental clearing of the radiographic shadow, were seen often enough to convince us that collapse is the main feature in most cases.

It is therefore because of this classification and the selectivity of the cases that the incidence of this segmental lesion is as high as 48·3% (260/538) in this series. This figure differs strikingly from the over-all incidence of 5–10% suggested by Bentley et al. (1954).

Local Parenchymatous Dissemination

This may well have been present in some cases, but definite radiological evidence was only obtained in 10 of the survivors, the total incidence being 4·6% (25/538). We came to regard this complication along with cavitation and bronchopneumonia with some trepidation because the mortality-rate in the lowest age-group (0–2 yr. 11 mos.) was about 60%. Among the survivors there were 5 in whom cavitation was observed, but it has been suggested that more frequent tomography would reveal a greater incidence of this complication (Heaf 1953). The necropsy figures of Bentley et al. (1954) add weight to this suggestion.

Most workers—e.g., Hardy et al. 1952, Daly et al. 1952, Lowys and Larmoyer 1953, Carlens and Hellström 1953, Adler and Richards 1953—find endobronchial disease in about half the cases bronchoscoped, with fistulæ less often observed, and the results in the present series are no exception. The bronchial wall was breached and the lumen encroached on by caseous material in 20 of 44 children bronchoscoped. It is therefore perhaps surprising that bronchopneumonia is rare, occurring only three times amongst the survivors and eight times in 58 necropsies. Gemmi and Rickler (1952) consider that most fistulæ heal without spread of tuberculosis.

Obstructive Emphysema

This developed in only 7 children and is particularly mentioned because at first this complication of hilar adenitis may be missed. It is usually associated with particularly large glands which have ulcerated through into the lumen of the bronchus. Stridor is often a prominent symptom, and bronchoscopy may give considerable relief.

Bronchiectasis

The development of this complication has always figured largely in published reports, and in this country Roberts and Blair (1950), Jones et al. (1946), and Hardy et al. (1952) have reported an alarmingly high incidence; 60%, 70%, and 71% respectively of children with segmental lesions were found to have bronchiectasis, in most cases confirmed by bronchography. Daly et al. (1952), however, found only 1·1% of 434 children with tuberculosis had proved bronchiectasis, but 18 others were suspected of having it. Hutchison (1949) also found a low incidence, 2 cases developing bronchiectasis out of 30 showing collapse.

In the present series 11 children had proved and persistent bronchiectasis—i.e., 2% of 538, and 4·2% of the children with segmental lesions. Of these 11 children 5 were among the 7 whose progress was unsatisfactory, whose lesions persisted for years, and who eventually underwent lobectomy. This may be an underestimate, and more cases may manifest themselves later, but there is good reason to believe that the early bronchial dilatation associated with segmental collapse is reversible. If bronchography is done early in the disease while collapse is present, a high incidence of bronchial dilatation may be expected, but good filling of the bronchial tree may, at this stage of the disease, be difficult. Even though some dilatation remains after re-expansion it is usually symptomless (Jones et al. 1946, Williams and Anderson

TABLE II—DEATHS (INCLUDING NON-PULMONARY PRIMARY CASES)

Complications	Age (yr.)					
	0–2¹¹/₁₂		3–5¹¹/₁₂		6–12	
	No. of cases	No. of deaths	No. of cases	No. of deaths	No. of cases	No. of deaths
Tuberculous meningitis ..	19	11 (58%)	19	6 (32%)	6	1 (17%)
Tuberculous meningitis and miliary tuberculosis ..	22	16 (73%)	14	11 (79%)	9	5 (56%)
Miliary tuberculosis ..	14	6 (43%)	8	0	5	1 (20%)
Total ..	55	33 (60%)	41	17 (41%)	20	7 (35%)

1953), and it is for this reason that bronchography was not done more often in children with segmental lesions. Until a few years ago bronchograms were done simply to confirm the presence of bronchial dilatation. Latterly, however, they have been done only if the children have remained ill and have shown persistent physical signs for two or more years. These children are among the important few who eventually require operation, and up to date 5 of the 11 children with proved bronchiectasis have had lobectomies. Altogether 39 children showed suspicious bronchial markings on straight radiography, and 16 of them underwent bronchography: 10 showed dilatation, 5 showed a normal bronchial tree, and in 3 the procedure was unsuccessful. Most of these children showing some crowding of the bronchi and suspicious dilatation were radiologically normal in about two years, but it seems that those who have abnormal bronchograms after this time are likely to require surgery. In addition to the 5 who have already had lobectomies, at least another 2 will probably require surgical treatment.

Pleural Effusion

As might be expected, half (57%) of the 28 children with this complication were in the oldest age-group (6–12 years); but 3 cases occurred in children aged less than 3 years, and 12 in children aged less than 6 years.

There have been reports that the ultimate prognosis of tuberculous pleural effusion is considerably worse than that of the simple primary complex (Bentley et al. 1954, Smithers 1934), and that children who develop their effusion after the age of 10 years have higher morbidity and mortality rates than the younger patients (Nathorst 1948). The long-term follow-up of these 28 children may be of some further value in this respect.

Miliary and Meningitic Tuberculosis

These were the most serious complications and either separately or together accounted for most of the deaths in this series (table II). There were 102 cases (19%). The incidence of these conditions alone or in combination is seen in table I. Of 61 children with miliary tuberculosis more than half developed meningitis; and, as in the investigation of 100 deaths by Bentley et al. (1954), there were about the same number of cases of meningitis with as without miliary disease. Again, as one might expect, the incidence of meningitis is highest in the lower two age-groups—i.e., less than 6 years—though miliary tuberculosis alone was much more often found in the children aged less than 3 years.

It must be emphasised again that the incidence of these serious complications is high partly because the cases admitted to hospital are a selected group, but the proportions within this group can probably be regarded as true estimates for hospital practice as a whole.

Miscellaneous Complications

To complete the picture the following complications should be mentioned, if only to indicate what diverse results may ensue through a restricted hæmatogenous spread: subcutaneous abscesses, dactylitis, spinal caries, arthritis of the hip, lupus, skin tuberculides, mastoiditis, and tuberculoma. We have been impressed by how late after the active phase of the primary complex bone tuberculosis can develop, and how easily the early stages of such a severe condition as spinal caries can be missed.

Phlyctenular conjunctivitis (unlike erythema nodosum, which is seen only in the early phase) has been observed at all stages of activity of the primary complex; and in 1 case the pressure of an enlarged gland caused a phrenic-nerve palsy.

Bacteriology

The isolation of the tubercle bacillus is still difficult and chancy. The advances in homogenising sputum for such examination have unfortunately little bearing on pædiatric practice, and the Ministry of Health (1952) has pointed out how important is the laboratory technique. With the advent of B.C.G. the finding of the bacillus has become more important, and it is disappointing to find such a high percentage of negative results in children known to have primary tuberculosis. This is not really surprising, since the primary complex is virtually a closed lesion, unless there is either parenchymatous spread or ulceration into a bronchus.

The results of bacteriological investigations in 160 cases are shown in table III. If the figures for the tonsils and adenoids are excluded, positive results were found in only 16% of examinations (25/152). This at first sight seems to compare unfavourably with the 30% success of Bentley et al. (1954), till it is realised that their patients included adolescents and a greater number of

TABLE III—BACTERIOLOGY

Source	Age (yr.)					
	0–2¹¹/₁₂		3–5¹¹/₁₂		6–12	
	Positive	Negative	Positive	Negative	Positive	Negative
Pleural fluid	..	3	1	6	..	4
Sputum	..	..	..	6	1	10
Stool	1	12	..	2	..	5
Gastric washing ..	12	43	5	17	5	19
Tonsils	4	7	1	3	1	1
Adenoids	7	2	3	1	1	1
Tonsils and adenoids together	..	10	..	10	..	12

patients with chronic pulmonary tuberculosis, from whom sputum is more easily obtained. The percentage of positive gastric washings in their cases and in the present series, however, is the same—about 22%. This close comparison might be expected because gastric lavage would be used in children of much the same age and with a similar clinical picture in the two groups. Since examination of pleural fluid and stools yields little reward, the discovery of the tubercle bacillus seems to be closely related to the availability of sputum. When sputum is obtained, however, there is still only a 50% chance of isolating the bacillus, even in older children and adolescents.

The tonsils and adenoids were removed in 64 cases for reasons which include chronic nasal discharge, recurrent infection of the upper respiratory tract which interfered with the child's general progress, sometimes persistent phlyctenular conjunctivitis, and because histological examination showed that infected tonsils and adenoids could keep the E.S.R. raised and delay the healing of the chest lesion.

The tonsils often looked unhealthy, but tuberculous tonsils just as often look innocent (Browne and Hall 1952). In no case was there tuberculous cervical adenitis; yet in 17 (26%) of 64 examinations of tonsils and/or adenoids evidence of tuberculosis was seen on histological examination. Browne and Hall (1952) found that virulent

TABLE IV—SOURCE OF INFECTION IN 578 CASES

Contacts	Age (yr.)						Total
	0–2 11/12		3–5 11/12		6–12		
	Definite	Doubtful	Definite	Doubtful	Definite	Doubtful	
Father	46	5	20	4	30	5	110
Mother	21	5	19	5	15	4	69
Grandparent	12	1	12	2	7	2	36
Other relations	24	2	30	2	20	3	81
Other people	11	3	14	3	13	1	45
Total	130		111		100		341
No contact known	64		103		99		266

bacilli were obtained from the tonsils and adenoids in about a third of the active, and in none of the inactive, cases of primary tuberculosis of the lung. In the absence of cervical adenitis it is likely that the tonsils and adenoids were secondarily infected by tubercle bacilli from the bronchial secretions. If there is chronic infection of the upper respiratory tract, the removal of the tonsils and adenoids is probably justified because there is a 1 in 4 chance that these may act as a source of continued infection with tubercle bacilli.

Source of Infection

312 of the 578 children had a history of contact with a known case of tuberculosis, 29 of them having had multiple contacts (table IV). The remaining 266 children had no such history, and only very few of these had no record of the question having been asked. Over half the children (54%) therefore had a tuberculous contact, the father (not the mother, as might be expected) being the most common positive contact. It is not surprising to find the highest contact-rate in the youngest age-group, and Bentley et al. (1954) go so far as to say that "There is an inverse relationship between age and history of important contact."

Bronchoscopy

Most workers agree that, as a therapeutic measure, bronchoscopy has not often been a success, and only one report (Margolisowa 1953) could be found in which re-expansion occurred in most cases. There are a few definite indications, however, and these include (1) massive collapse, particularly involving the lower lobes; (2) a suspected suppurative lesion distal to bronchial obstruction (Bentley et al. 1954); (3) obstructive emphysema (perhaps as an emergency procedure); and (4) possibly stridor. The advisability of bronchoscopy in the presence of stridor is debatable because cases have been seen where the added œdema following the bronchoscopy has been sufficient to turn a partial obstruction into a severe and dangerous one.

In segmental lesions associated with primary tuberculosis bronchoscopy may well come to be used more as a diagnostic than a therapeutic weapon. With the increasing use of B.C.G. bronchoscopies may become more often necessary to establish the nature and cause of a radiological lesion in a vaccinated child. The decisions regarding therapy may thus be made easier, though attempts to obtain either pus or granulation tissue will, it seems, succeed in only half the cases.

The findings in 44 children subjected to bronchoscopy are presented in table V. These children all had a primary complex with some collapse or consolidation, and in 12 children bronchoscopy was repeated more than once (on four occasions in 1 child) in an attempt to clear an obstructed airway. 11 of the children were aged less than 2 years, and several less than 1 year; yet they presented no great technical difficulty. Various combinations of pulmonary collapse were discovered; usually only one lobe was affected, in particular the right upper lobe. Collapse of the right middle and lower lobes was the most usual combination seen. Endoscopy revealed tuberculous granulations from rupture of a gland through a bronchus in about half the cases (20 out of 44). Such granulations were always removed at operation, but subsequent bronchoscopy a few months later often showed that granulations had formed again. Other endoscopic findings of primary importance were bronchial narrowing from external pressure of glands (4 cases), ulceration (1 case), pus exuding from a bronchus (2 cases), and a scarred stenotic bronchus (2 cases). No abnormality was detected in 15 cases, the obstruction causing the collapse being apparently beyond endosco-

TABLE V—BRONCHOSCOPY FINDINGS AND EFFECTS IN 44 CASES

Findings	Improved		No improvement	
	Primary importance	Secondary importance	Primary importance	Secondary importance
Granulations	9	..	11	..
Associated obstructive emphysema	..	4	..	..
Associated stridor	..	2	..	..
Narrowing from pressure outside bronchus	1	3	3	..
Bronchial stenosis	..	..	2	3
Bronchial ulceration	..	1	1	..
Pus in lumen	..	..	2	2
No abnormality found	1	..	14	..
Total	11	10	33	5

TABLE VI—INCIDENCE OF STREPTOMYCIN THERAPY AMONG 477 CHILDREN WHO SURVIVED

Primary lesion	Age (yr.)									Total		
	0–2 11/12			3–5 11/12			6–12					
	Treated	Not treated	Total	Treated	Not treated	Total	Treated	Not treated	Total	Treated	Not treated	Total
Pure primary complex / Collapse / Consolidation and "flare"	15*	111*	126	5	132	137	4	115	119	24 (6%)	358	382
Local dissemination	4	2	6	3	6	9	7	1*	8	14	9	23
Effusion	1	1	2	3	5	8	0	11	11	4	17	21
Tuberculous meningitis	5*	0	5	10	0	10	4	0	4	19	0	19
Miliary tuberculosis and meningitis	4	0	4	1	0	1	4*	0	4	9	0	9
General miliary tuberculosis	11	0	11	7	1 (1 unknown)	8	4	0	4	22	1	23
Total	40 (26%)	114	154	29 (16%)	?144	173	23 (15%)	127	150	92 (19%)	?385	477

* Including tuberculous mastoiditis and bone tuberculosis.

pic view, or else these may have been examples of periglandular "flare."

No particular age-group derived greater benefit from bronchoscopy than any other; so the group is taken as a whole. Immediate improvement was apparent in only 11, in whom removal of granulations allowed rapid re-expansion of the collapsed lobe (9 cases) or stridor to diminish considerably (2 cases). In the other 33 cases endoscopy produced no permanent change in the local condition, and re-expansion of the lung took its time. The deduction is that bronchoscopy can be undertaken in a child with a primary complex and pulmonary collapse in the hope of clearing the affected bronchus from caseous infective material and improving the airway. Except for occasional immediate postoperative œdema with distress the procedure was harmless. It must be admitted, however, that on rare occasions the postoperative condition gives some cause for uneasiness. In only 1 case did further collapse occur after endoscopy.

Treatment

The general plan included hospital treatment during the very active stage and, as soon as possible, transfer to the country branch of Great Ormond Street, other convalescent institutions, or home, according to the progress and domestic circumstances of the patient. When circumstances permitted, the children were treated entirely as outpatients (Hall 1951). Sanatoria specifically designated for tuberculosis were used only in exceptional cases, usually in children with parenchymatous lung lesions and cavitation. Nearly all were subsequently followed in the tuberculosis clinic at Great Ormond Street or medical outpatient department at University College Hospital.

Streptomycin, *p*-aminosalicylic acid, and, more recently, isoniazid have been used in selected cases only. Almost all (49 out of 55) the children with serious forms of tuberculosis who were admitted to hospital and subsequently died were treated with one or other or a combination of these drugs.

Analysis of 477 of those who survived (table VI) showed that 19% were thus treated, those with miliary tuberculosis and tuberculous meningitis invariably and those with local dissemination almost always. In dealing with a primary complex, with or without collapse and consolidation, specific therapy was given only in 6%, mostly for those with questionable spread to the surrounding parenchyma and with other complications, such as bone tuberculosis and mastoiditis irrespective of the age of the child. Only 15 of the 126 children with this lesion and aged less than 3 years were given antibiotic therapy, and 11 of these were aged less than 1 year. Limiting the treatment in this way runs rather counter to the ideas of many present-day pædiatricians (e.g., Todd 1952, Wallgren 1950), and particularly the French (e.g., Debré 1951, Cathala et al. 1949) who advise giving specific antibiotics to all children aged less than 1 or even 2 years with a primary complex. Although the tendency now is to give all infants antibiotic treatment, the previous policy, which is adopted also by Dufourt et al. (1950) and Miller (1952), seems fairly well justified when the prognosis is studied. Critics might argue that more cases of miliary tuberculosis and meningitis might have been avoided if streptomycin had been used as a routine, especially in the younger children. Some workers—e.g., de Beule (1952) and Lorber (1950)—make the point that there is no certainty that such treatment will prevent these complications, which may even arise during therapy (Sacrez and Burghard 1951) and have done so in a very few cases in the present series. The course the lesion took was usually most satisfactory; re-aeration of the lung proceeded steadily, and healing took place with calcification. Although the use of antibiotics in disseminating lesions is undisputed, there is no evidence in the present series that they have any influence on a caseating adenitis or an associated pulmonary collapse or that they will hasten recovery. This conclusion is in accordance with the findings of Russell and MacArthur (1950) and Lorber (1950).

Lobectomy

There is little doubt that, with the passage of time, thoracic surgery will play a more extensive rôle in the treatment of tuberculosis in children. The indications for surgery, the best stage of the disease at which to apply it, and the relative merits of hilar adenectomy and segmental or lobar resection are all subjects of much debate. Excellent results have followed lobectomy in 7 cases in the present series. The children were aged 1–10 years at operation and 6 of the 7 had previously been bronchoscoped—without benefit. Only 2 children received streptomycin and *p*-aminosalicylic acid to cover the operation, though this is now standard practice. They all did very well and were discharged from hospital from ten to twenty-eight days after operation. It is considered that early operation is not indicated, and these cases were chosen for surgery because the child's general condition remained poor and there was no evidence of healing of the lung lesion over some years. The 1 exception was an infant aged 7 months who was not progressing satisfactorily after five months' observation but did very well after a right mid and lower lobectomy at the age of 1 year. The endoscopy findings included granulations, adenitis, ulceration, and scarring; and the lobectomy specimens revealed collapse, bronchiectasis, caseation, and calcification.

Prognosis

Of the 215 surviving children who have been followed up from two to five years only 1 child died two years after the onset of the illness. The outlook in children who have survived 2 years is good and a fair assessment of immediate prognosis can therefore be made after a follow-up of this duration. Most of the children have, in fact, been under supervision far longer. Table VII shows the clinical and radiological state when the child was discharged or when last seen in 1953.

Of the 215 children 152 were well clinically and radiologically; 47 were in good health but had persistent radiological shadows (the lobectomy cases are included in one or other of these groups). Only 4 were still unwell and were radiologically abnormal. In addition 12 children were under observation for non-tuberculous conditions or because of residual complications after tuberculous meningitis. Experience has proved that resolution of the segmental lesion takes about two years whatever the cause, though the radiological picture may take rather longer to clear in the younger children.

TABLE VII—PROGNOSIS IN 215 SURVIVORS

Length of follow-up (yr.)	Clinically and radiological well			Clinically well with persistent radiological lesion			Ill with radiological lesion			Non-tuberculous lesions and sequelæ of tuberculous meningitis
	Age at onset (yr.)									
	0–2 11/12	3–5 11/12	6–12	0–2 11/12	3–5 11/12	6–12	0–2 11/12	3–5 11/12	6–12	0–12
2	12	11	22	5	5	5	(1)	..	(1)	3
3	13	17	14	4	5	2	2	..	..	3
4	11	14	8	5	4	3	1	(1)	(1)	2
5+	11	12	7	6	1	2	(1)	(2)	1	4
Total	152			47			4 + (7)			12

The numbers in parentheses indicate the age (yr.) at which lobectomy was done. Since these children are now all doing well they have been included elsewhere in the table.

If we exclude the fatal cases considered below, the immediate prognosis (2–5 years) in this series is universally good. Even in the 13 survivors who had pleural effusion the outlook seems good, only 1 showing symptomless radiological abnormality within this limited period. Of the 9 survivors who had local dissemination 7 did well; 10 of the 12 survivors who had miliary tuberculosis, all 3 survivors who had tuberculous meningitis, and all 6 who had both did well. Of the 39 survivors without complications only 3 had symptomless radiological changes. Many of the children were left with areas of calcification either in the primary focus or in the hilar glands, or scattered in the lung fields. Increasing density of the calcification was observed as the years passed and was assumed to be good evidence of healing. Later, in some children, the area involved diminished and some of the calcium appeared to be absorbed.

Deaths

An exact estimation of mortality in a condition with so long a natural history as tuberculosis is difficult. The following figures are of value only as an estimate of the two to five year death-rate, and the longer follow-up will be of much greater interest. It is realised also that there is an unavoidable selection of cases, and that the over-all death-rate is higher than it would be in entirely unselected cases of primary tuberculosis. The fact that some of the cases were treated in the early days of streptomycin therapy also has some bearing on the figures. They

TABLE VIII—MAIN LESIONS FOUND POST MORTEM IN 58 CASES

Lesion	Age at onset (yr.)		
	0–2 11/12	3–5 11/12	6–12
Tuberculous meningitis	9	5	0
Tuberculous meningitis and miliary tuberculosis	15	10	4
Miliary tuberculosis	4	0	1
Segmental lesions	8	3	1
Local dissemination and broncho-pneumonia	7	1	0
Non-pulmonary tuberculosis with or without miliary tuberculosis and meningitis	5	2	2

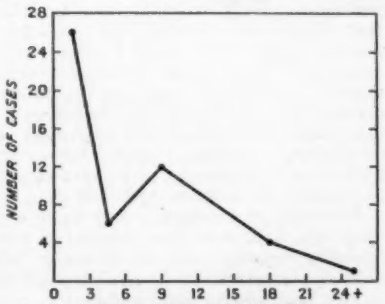
All except 8 cases had antibiotic treatment.

may well be of interest, however, to those who work in hospitals with a similar intake of patients to that at the Hospital for Sick Children and University College Hospital.

Among the 578 patients who had active primary pulmonary tuberculosis 58 (9·5%) died, and the lowest death-rate of the two hospitals was 8·7%. The main lesions found post mortem are given in table VIII. (This table includes 3 cases of non-pulmonary primary tuberculosis which were added for interest.)

As one might expect, the commonest lesion was tuberculous meningitis with or without miliary tuberculosis and this was most often observed in the younger children. Tuberculous bronchopneumonia and extensive caseating lesions accounted for most of the remaining cases. For the purposes of comparison the lesions found in non-pulmonary tuberculosis have been included, and the inclusion of these and of those cases in which the primary site was unknown does not significantly alter the mortality-rate, which was 70 out of 665 (10·5%).

In 49 of the 55 deaths the duration of the tuberculosis could be assessed accurately, and the findings are shown in the accompanying figure. Over half (26) died during the first three months, and a further 18 within the first year. There were only 5 deaths after that, and only 1 child died after two years had elapsed. This indicates that, as regards the immediate mortality, a two-year follow-up is probably adequate in most cases, disregarding later deaths from "reinfection" or "reactivation" tuberculosis.



Time of death in 49 cases.

Table II shows the relative frequency of death from tuberculous meningitis and miliary tuberculosis, alone and in combination. This includes cases with non-pulmonary primary foci, giving a total of 57. It shows at a glance that the presence of miliary tuberculosis in cases of tuberculous meningitis weighs heavily against the chances of survival. In the younger age-groups 73% and 79% of children with the combined lesion died, whereas only 58% and 32% of those with meningitis alone died. Even in the children aged 6–12 years this striking difference is evident. Miliary tuberculosis by itself, however, seems to be less fatal than meningitis, but once again the younger the patient the worse is the prognosis. These conditions were fatal in 60% of the 55 children aged less than 3 years and in 35% of the 20 children aged 6–12 years.

With advances in antibiotic treatment the mortality-rate should diminish. With more immediate examination of contacts and early diagnosis it is hoped that these figures will be greatly reduced. There is, in fact, some evidence of improvement already.

Conclusions and Summary

The complications, source of infection, and bacteriology in cases of primary tuberculous complex of the lung have been studied. The part played in their treatment by streptomycin and other specific antibiotics, bronchoscopy, and lobectomy has been reviewed, and the prognosis and mortality have been assessed.

This study confirms once again the relatively good short-term prognosis of the pulmonary primary complex in childhood. The mortality-rate of less than 10% in this rather selected series of cases compares favourably with the results of other units and would, of course, be reduced if the "non-active" cases were included. It might be argued that the number of cases developing serious complications, and therefore the mortality-rate, would have been lower if streptomycin and other specific antibiotics had been used more often.

It seems unlikely that the unusually high incidence of segmental lesions observed in this series is due to this factor; it arises through unavoidable selection of the more serious cases, the classification used, and the individual variation in terminology and interpretation of the radiological segmental lesion. A follow-up for two to five years has shown that most of these lesions resolve within two years.

The extremely low incidence (4·2%) of proved bronchiectasis following such lesions is explained by the fact that the resulting bronchial dilatation is usually symptomless and does not impair general health. Usually bronchography was done only in cases with persistent ill health and abnormal clinical findings; therefore proof of the presence of these symptomless lesions (which seem to be of little importance) is wanting.

The presence of miliary dissemination in cases of tuberculous meningitis weighs heavily against the chances of survival, and these two complications of the primary complex remain the principle dangers. This review

includes the early streptomycin era; it is therefore hoped that future series treated with this and the newer antibiotics, alone or in combination, will have a lower mortality. The value of streptomycin and *p*-aminosalicylic acid in these cases has been obvious; yet in this survey 60% of children aged less than 3 years, of whom practically all received this treatment, died from these conditions. A plea is made for early diagnosis and institution of treatment, and examination of all contacts, particularly of children aged less than 3 years.

Although bronchoscopy has been of some value in diagnosis, and with the increasing use of B.C.G. will probably become more so, its use in treatment is very limited. Greatest benefit has been derived in cases with stridor and obstructive emphysema, and most workers agree that these findings justify bronchoscopy. Opinions vary about the other indications for bronchoscopy, but these probably should include massive persistent collapse, particularly of the lower lobes.

Lobectomy is undoubtedly well borne by children, and one is impressed by the short time it takes them to become fully active after the operation. Although some workers advocate early surgical intervention, it is the opinion of most that lobectomy should be reserved for cases which have not responded to a reasonable period of adequate medical treatment.

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INITIAL CONTROL OF HYPERTENSION WITH PENTOLINIUM TARTRATE

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ALTHOUGH a completely satisfactory treatment for essential hypertension has yet to be devised, recent years have produced a surfeit of hypotensive drugs, of which many are no better than a placebo, but some—notably hexamethonium and pentolinium tartrate—have proved their worth sufficiently to supplant sympathectomy as a treatment of choice.

In the Gateshead group of hospitals methonium salts have been used from the autumn of 1950, and to assess their effect more completely a clinic for hypertensives was started in the summer of 1951. From October, 1953, pentolinium tartrate ('Ansolysen') was used, and subsequently most of the new patients with hypertension were treated with this drug in preference to all others. At present the patients who were receiving hexamethonium with a retarding agent by daily subcutaneous injection are being given pentolinium tartrate by mouth.

The results of this policy will take some years to assess; we report here merely the method used for stabilising patients on pentolinium tartrate in hospital.

Type of Patient Selected

Up to now 72 hypertensives have been admitted to hospital for treatment with pentolinium tartrate. The method of selection was similar to that of McMichael (1952). We recognise the following groups:

(1) Labile hypertensives, with diastolic pressure below 120 mm. Hg but no complications, who require only sedation, reassurance, and reduction of obesity.

(2) Patients with persistent hypertension (diastolic pressure 120 mm. Hg or higher) and established complications.

(3) Patients with malignant and premalignant hypertension.

Most of the patients treated with pentolinium tartrate were in groups 2 and 3. They had persistently high diastolic blood-pressure or persistent symptoms, usually headache, breathlessness, dizziness, and failing vision. Nevertheless, if severe symptoms were present, patients with diastolic pressure as low as 100 mm. Hg were treated.

Symptoms and Signs

The following symptoms were present in the 72 patients at the time of selection for treatment:

	No. of cases
Headache	47
Feeling of fullness in head	25
Dyspnœa	56
Vertigo	51
Angina pectoris	34
Fainting	25
Palpitations	41
Paræsthesiæ of extremities	23
Noises in head	25
Dependent œdema	25
Epistaxes	12
Failing memory	27
Loss of concentration	28
Failing sight due to hypertensive retinopathy	42

The age and pathological distributions were as follows:

Age (yr.):	*Males*	*Females*
20–30	1	0
31–40	1	3
41–50	3	8
51–60	3	31
61–70	5	14
71–80	0	3

Pathological distribution:

Benign essential	11	44
Malignant	1	5
Renal	0	1
Endocrine	0	0
Arteriosclerotic	1	8
Hypertension following toxæmia of pregnancy		1

There were 59 females and 13 males. Most of the patients were in the 6th decade.

Electrocardiographic Changes

Of the 72 patients 47 showed electrocardiographic changes amounting usually to those associated with left ventricular preponderance and axis-deviation. 28 of these had also inverted T waves and S–T segment abnormalities of left ventricular strain. 1 patient with associated emphysema and cor pulmonale had right axis-deviation.

Radiographic Changes

32 patients showed appreciable enlargement of the left ventricle, and massive cardiac enlargement was present in 2.

Fundal Changes

In 70 patients whose fundi were visible fundal changes were present as follows: grade 4 in 5; grade 3 in 8; and grade 2 in 35. Grade-1 changes in the vessels were present in 9, and there were none demonstrable in 13.

Contra-indications

Obese patients were not admitted until 1000-calories diet and weight reduction had been given a thorough trial at home. A history of angina pectoris, coronary thrombosis, or cerebral thrombosis was not regarded as contra-indicating treatment with pentolinium tartrate, and mild confusion did not prevent its use. Senile dements were excluded. A raised systolic blood-pressure with arteriosclerosis was not treated unless accompanied by persistently raised diastolic pressure.

We do not intend to discuss the effects of pentolinium tartrate on renal blood-flow. Tests of renal function were of limited character. A raised blood-urea level or an impaired urea clearance, previous nephrectomy, or obvious kidney disorder was a signal for circumspection, and a rising blood-urea level led to discontinuation of treatment. Patients with malignant fundal changes were treated despite a rising blood-urea level. The single case classified as renal hypertension was one of only mild hydronephrosis, with normal renal function, and this patient has so far done well. However, since this series was completed, a rapidly rising blood-urea level has been observed during treatment of 1 patient who had had previous nephrectomy for hydronephrosis.

Patients with prostatic symptoms, intestinal distension, or glaucoma should not be treated.

Procedure in Hospital

The patients were re-examined on arrival, and urological tests, urea-clearance tests, intravenous pyelography, chest radiography, and electrocardiography were done. Piperoxane or phentolamine tests were given to selected patients. Of 72 patients only 1 was found to have unilateral renal disease on routine pyelography, and it is doubtful whether this procedure is necessary when the urine is chemically and microscopically normal. The femoral pulses of all patients admitted were examined, but in the present 72 and the 185 followed in the clinic for hypertensives no case of coarctation of the aorta came to our notice.

Control Observations

It is often stated (e.g., Rønnov-Jessen 1954) that the patient should have a preliminary eight to fourteen days in hospital to allow the blood-pressure to reach a resting level. Though we admit the desirability of a control period we are doubtful whether it is economically possible to give such periods of up to a fortnight to patients who may occupy a quarter of the beds in the general hospital wards. In place of this, one can rely on preliminary outpatient observations coupled with a known history of hypertension and a relatively short period of up-patient observation in hospital, followed by a control day of two-hourly blood-pressure readings. It is not important to know whether the patient's blood-pressure will come down to near normal with rest in bed in hospital, nor is it essential to give from three to five days' rest in hospital before observations are made on blood-pressure response to hypotensive drugs. The problem is not the patient in hospital but the patient in home, office, or workshop. Comparative freedom from the constant irritations and worries of domestic and working life make hospital surroundings artificial and lessen the value of blood-pressure readings taken there. Ideally, blood-pressure observations should be made in kitchens, offices, workshops, and factories. The alternative in a medical ward is the encouragement of activity. Patients were therefore kept up between 8 A.M. and 8 P.M. and required to walk twice the length of the ward before recordings were taken.

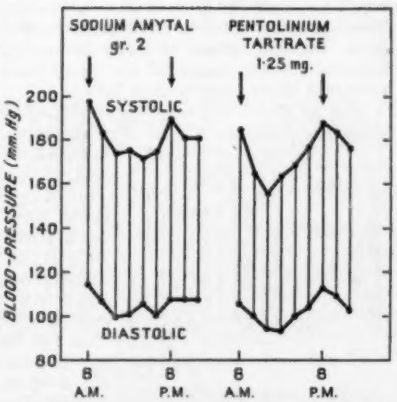

Fig. 1—Comparison of effects of sodium amytal gr. 2 and subcutaneous pentolinium tartrate 1·25 mg. given at 8 a.m. and 8 p.m. (averages of blood-pressures of 12 patients).

Morning blood-pressures may be rendered abnormally low by the use of barbiturate sedatives, which were therefore not given during the period of hospital assessment. The effect of 'Sodium amytal' on the blood-pressures of 12 patients is compared with that of pentolinium tartrate in fig. 1.

Day before Trial Dose

Control observations were made on the blood-pressure every two hours from 8 A.M. until midnight. In the case of known hypertensives of some years' standing this

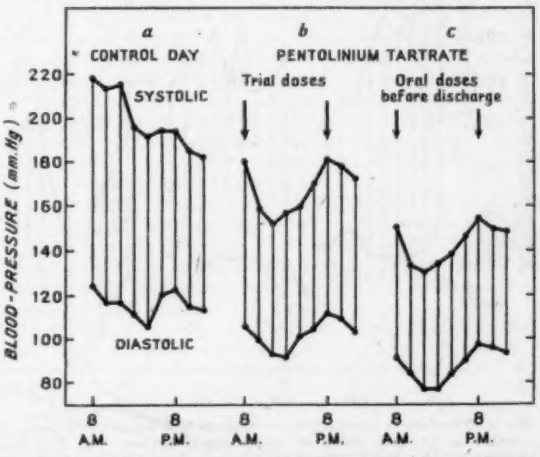

Fig. 2—Average blood-pressure readings of 12 hypertensives two-hourly from 8 a.m. to midnight. Average time between b and c is ten days.

could be done on the first day. Admittedly the morning blood-pressure tended to fall spontaneously on subsequent days but the effect of pentolinium tartrate could be assessed by the shape of the two-hourly curve without reference to the day-to-day fall.

Fig. 2*a* shows the average results of two-hourly blood-pressure controls in 12 hypertensives who were up between 8 A.M. and 8 P.M. and in bed subsequently. The day-time blood-pressures were observed after brisk walks along the ward. It will be seen that the blood-pressure had dropped by 2 P.M. and reached a day-time minimum at 4 P.M. This fall took place in 9 of the 12 patients from whom the average blood-pressure curves are constructed in the figure. After 4 P.M. the blood-pressure rose again, reaching a peak when the patients received their visitors between 7 and 7.45 P.M., and fell after their return to bed at 8 P.M. Lights were extinguished at 10 P.M.

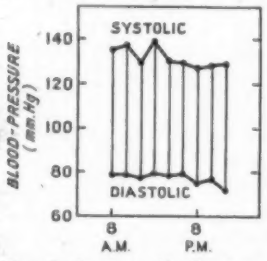

Fig. 3—Average blood-pressure readings of 12 normotensives two-hourly between 8 a.m. and midnight. Compare fig. 2*a* and note absence of fall of diastolic blood-pressure at 4 p.m. and smaller fall between 10 p.m. and midnight.

The importance of this control is manifold. It establishes that the hypertension is persistent throughout the day, and it serves as a base from which the effects of hypotensive agents can be estimated. Were this control to be omitted, the 4 P.M. fall might be attributed incorrectly to the effect of pentolinium tartrate. The diurnal variations of blood-pressure may serve as a guide to variations in the dosage of the hypotensive drug.

Fig. 3 shows the corresponding two-hourly control blood-pressures taken in normotensives. The fall at 2 P.M. is no longer seen, the fall at 4 P.M. is very much less, and the blood-pressure varies much less than in hypertensives (fig. 2*a*).

Day of Trial Dose

On the following day a subcutaneous trial dose of pentolinium tartrate was given. The makers recommend a trial dose of 2·5 mg. but this occasionally produced alarming falls in blood-pressure; therefore all the present patients were given a trial dose of 1·25 mg. Even this comparatively small dose led to diastolic blood-pressures of 50 mm. Hg and associated faintness requiring intravenous methylamphetamine in 3 patients, 1 of whom was severely shocked, sweating, and pale.

This trial dose was given solely to detect excessive reactions. In 15 patients the blood-pressure did not fall appreciably after the trial dose, but such absence of response was not regarded as contra-indicating the treatment (fig. 4). In 12 of these 15 patients who did not respond to their trial dose the blood-pressure was successfully reduced in hospital.

2 patients had unexpected falls in blood-pressure later in the treatment: 1 was a moderate fall on the seventh day; the other was a more dramatic fall on the nineteenth day (fig. 5).

Fig. 2*b* shows the average blood-pressure of 12 hypertensives given a trial dose of pentolinium tartrate. At 8 A.M. 1·25 mg. was given. The maximal effect was at noon, and some was still present at 2 P.M., but it was wearing off by 4 P.M. The blood-pressure sometimes regained the previous levels between 6 P.M. and 8 P.M. if no further dose was given.

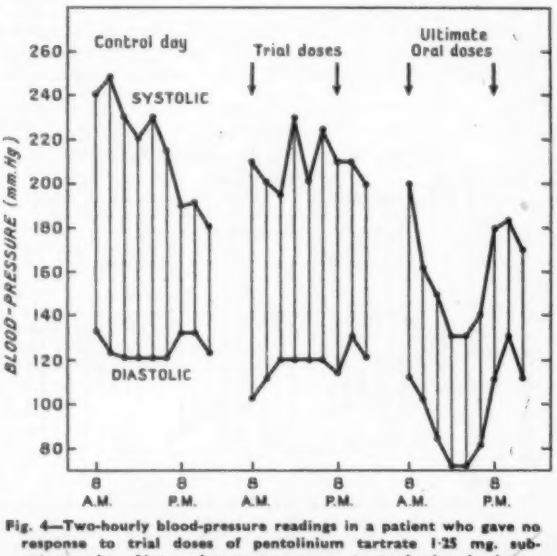

Fig. 4—Two-hourly blood-pressure readings in a patient who gave no response to trial doses of pentolinium tartrate 1·25 mg. subcutaneously. Note subsequent response to twelve-hourly dosage (shape of curve indicates that eight-hourly dosage would be better).

Subsequent Days

The trial dose was repeated on the evening of the first day, on the second day the dose was increased to 2·5 mg., and thereafter daily increments were made until the diastolic blood-pressure reached 80 mm. Hg. The dose can be given either twelve-hourly at 8 A.M. and 8 P.M.; eight-hourly at 7 A.M., 3 P.M., and 11 P.M.; or seven-hourly at 7 A.M., 2 P.M., and 9 P.M. The shape of the curve produced by the subcutaneous trial dose should help one to select the proper interval between doses, but the individual convenience of the patient must be considered.

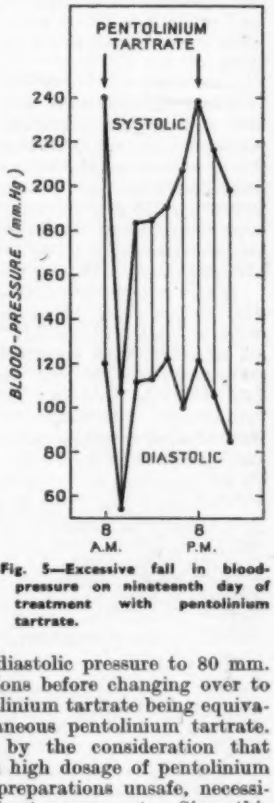

Fig. 5—Excessive fall in blood-pressure on nineteenth day of treatment with pentolinium tartrate.

We usually reduced the diastolic pressure to 80 mm. Hg by subcutaneous injections before changing over to tablets, 40 mg. of oral pentolinium tartrate being equivalent to 2·5 mg. of subcutaneous pentolinium tartrate. This policy was dictated by the consideration that patients might require such high dosage of pentolinium tartrate as to render oral preparations unsafe, necessitating a reversion to the subcutaneous route. Since this happened in only 1 case of malignant hypertension, the oral preparation is now being successfully introduced earlier at one hospital, where sometimes only the trial dose is given subcutaneously. Pentolinium tartrate was usually much better tolerated by mouth than by subcutaneous injection; and, when excessive postural giddiness or hypotension followed subcutaneous injection, a change to the oral route was usually all that was necessary.

With oral pentolinium tartrate the dose was increased by 20 mg. (half a tablet) each day until the diastolic blood-pressure fell to 80 mm. Hg and remained there for at least two readings on both of two successive days,

TABLE I—IMPROVEMENT

Symptom	Present on admission (no. of cases)	Still present but improved (no. of cases)	Complete relief (no. of cases)
Headache	47	26 (55%)	14 (30%)
Feeling of fullness in head	25	16 (64%)	3 (12%)
Dyspnœa	56	32 (57%)	12 (23%)
Vertigo	51	26 (50%)	14 (28%)
Angina pectoris	34	22 (64%)	6 (18%)
Fainting	25	3 (12%)	16 (64%)
Palpitations	41	21 (51%)	11 (27%)
Paræsthesiæ of extremities	23	9 (39%)	5 (22%)
Noises in head	25	9 (36%)	9 (36%)
Dependent œdema	25	8 (32%)	10 (40%)
Epistaxes	12	0	11 (92%)
Failing memory	27	11 (46%)	3 (11%)
Loss of concentration	28	12 (43%)	6 (21%)
Failing sight due to hypertensive retinopathy	42	13 (31%)	3 (7%)

whereupon the patient was discharged. This process took from four to twenty-six days (average ten days). The average dosage when the patient left hospital was 80 mg. by mouth. The largest twice-daily dosage was 280 mg., and the largest thrice-daily dosage 220 mg.

Immediate Results of Treatment

Reduction of Blood-pressure in Hospital

The reductions of blood-pressure in up-patients in hospital were as follows:

Diastolic blood-pressure (mm. Hg)					
Initial			*On leaving hospital*		
180–189	1		< 50	1	
170–179	5		51–70	6	
160–169	0		71–80	38	
150–159	5		81–90	16	
140–149	7		91–100	5	
130–139	19		101–110	5	
120–129	11			—	
110–119	17		Total	71	
100–109	6				
Total	71				

During the course of hospital stabilisation 1 patient died from cerebral hæmorrhage.

Of the 26 patients whose diastolic pressure was not reduced to 80 mm. Hg most were disharged for such social reasons as responsibility for children in the home, pressing business, or a previously booked holiday. In later series of patients we reduced the diastolic pressures to 80 mm. Hg in most of the non-malignant hypertensives.

Table I shows the improvement in symptoms from three to twelve months after discharge. It will be seen that amelioration of the major symptoms of hypertension, headache, breathlessness, and giddiness is possible in three-quarters of the cases. Angina, sometimes regarded as a contra-indication of treatment, was helped in 82%. The most striking result concerned repeated epistaxes, which did not recur in 11 out of 12 patients observed up to twelve months. Compared with other series, improvement of vision was a disappointment, although in the early stages of treatment of malignant hypertension it was occasionally remarkable.

TABLE II—SIDE-EFFECTS OF PENTOLINIUM TARTRATE

Side-effect	No. of cases	Subsequent improvement (no. of cases)	Remedy
Ileus	0	0	Treatment discontinued
Constipation	11 (16%)	0	Simple laxatives; cholinergic drugs
Diarrhœa	0	0	Chalk mixtures
Dry mouth and anorexia	26 (36%)	13	Pilocarpine nitrate gr. 1/10, neostigmine 15 mg.
Vomiting	0	0	
Retention of urine	0	0	'Urecholine'
Blurred vision due to paralysis of accommodation	14 (19%)	..	Eserine drops in eyes, change of spectacles
Sudden falls of blood-pressure	5 (7%)	5	Methylamphetamine

Side-effects

With dosages of either 220 mg. three times a day or 280 mg. twice a day severe reactions, such as paralytic ileus and retention of urine, were not observed. Larger doses were not used, because we felt that ileus might follow their use. Table II shows the side-effects observed in the 72 patients treated.

Most of the patients tolerated dryness of the mouth without undue complaint; the remainder were helped by pilocarpine. It was not usually necessary to instil eserine drops into the eyes. Where paralysis of accommodation made reading difficult patients had their spectacles changed as soon as a reasonably constant dosage was reached.

Aftercare

Within three weeks from their discharge from hospital all the patients were seen at the clinic for hypertensives, when their progress was reviewed and dosage changed if necessary.

Very few patients maintained the lower levels of blood-pressure after discharge from hospital; therefore the dosage of pentolinium tartrate almost invariably had to be increased. Symptomatic relief, however, persisted.

Some of these patients have now been followed for twelve months. During this time 2 of them have died of cerebral hæmorrhage (1 had ceased to attend the clinic); and 1, who had malignant hypertension, has died of pulmonary embolism complicating left and right ventricular failure.

Conclusions and Summary

After three years' experience of the treatment of hypertension in hospital and in a clinic for hypertensives a method of initial stabilisation of patients on pentolinium tartrate has been evolved.

The method requires that patients shall be up during the greater part of the hospital day and be exercised before blood-pressure estimations, which are taken sitting erect two-hourly.

The initiation in general practice of hypotensive treatment with pentolinium tartrate is inadvisable because of the liability to occasional severe reactions which need prompt counter-measures.

Pentolinium tartrate is rapidly superseding hexamethonium retard as the hypotensive agent of choice.

In essential hypertension and in a few cases of malignant hypertension it is possible to reduce a patient's diastolic blood-pressure from almost any level to 80 mm. Hg for three or four hours out of twelve on several successive days before the patient leaves hospital.

It has not usually been possible to maintain the blood-pressure at this level after the patient has left hospital. Nevertheless blood-pressure levels achieved with hexamethonium and other drugs can be equalled, and symptomatic relief is the rule.

Preliminary two-hourly blood-pressure readings are important in deciding the subsequent treatment.

After the midday meal there is, in ambulant patients, a natural drop in the blood-pressure which might be mistaken for a therapeutic effect if these control blood-pressure readings were not taken.

The trial dose of pentolinium tartrate should be only half that at present advised by the makers.

Failure to obtain a response to a trial dose should not deter one from treating with pentolinium tartrate, because a bigger dose usually produces a satisfactory response.

Our grateful thanks are due to Dr. C. N. Armstrong for permission to include cases admitted into his care at the

Queen Elizabeth Hospital, Gateshead, and to Dr. H. A. Dewar, who first encouraged the use of pentolinium tartrate in place of hexamethonium in the hospital group and has advised us constantly since.

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"EPIDEMIC VERTIGO" WITH OCULOMOTOR COMPLICATION

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A GENERAL practitioner requiring assistance with a patient who has suddenly developed vertigo is likely to find the choice of consultant a little embarrassing. Shall he burn his boats and summon a neurologist or an otorhinologist, or more cautiously turn to a general physician as a neutral referee? Ultimately each of these specialists sees his fair share of such cases, and from his individual experience each would probably be able to recollect an occasional example of the mysterious malady usually referred to in this country as "acute labyrinthitis."

Perhaps on account of its sporadic occurrence and benign character, the condition does not seem to have attracted much attention until the appearance of an annotation in *The Lancet* (1952). This suggested that there might recently have been a small epidemic of this disease and cited the experience of a Hampstead doctor who had had 6 cases in his practice during January, 1952. In the subsequent brief correspondence only two general practitioners (Currie 1952 and Fry 1952) claimed to have had a similar experience in the immediately preceding months; but later Burrowes (1952) described elsewhere 6 cases of this type seen in a general practice during the same period. Several other writers indicated that they were familiar with the condition, and in particular Worster-Drought (1952) contributed an authoritative account based on records of almost 50 cases seen in neurological practice over a period of seven years. The features which he considered characteristic were vertigo of sudden onset with vomiting and nystagmus, though this last feature was by no means always present. Coördination appeared never to be affected, and there was rarely significant deafness though some patients described transient tinnitus. Recovery was the rule, though this might take from six weeks to twelve months and in the early stages relapses were common. Worster-Drought emphasised that "acute labyrinthitis" (a designation which he accepted) could be diagnosed only after other causes of vertigo had been excluded, and that in this connection the absence of persistent deafness and tinnitus was strong evidence against Ménière's syndrome.

More recently Dalsgaard-Nielsen (1953) has summarised a study of 21 cases of "epidemic vertigo" admitted to hospital in Copenhagen within the past few years. These cases he considered were representatives of an epidemic which had been prevailing in Denmark generally. The chief interest of this paper lies in the additional features which were occasionally observed, for in its essentials the clinical picture seems to have been identical with that seen previously in this country. 2 of the patients, for example, had diplopia, and one or two more had unequal pupils. Hiccup was a complication on 2 occasions, and 6 of the 13 cases studied by electro-encephalography were said to show dysrhythmia. Although the cerebrospinal fluid (C.S.F.) was invariably found to be normal Dalsgaard-Nielsen concluded that there was every justification for regarding this condition as a form of encephalitis.

My first encounter with this rather alarming illness found me singularly unprepared. Indeed had it not been my good fortune to see in rapid succession further cases of almost identical character, I would probably have remained unenlightened. Some of the cases in this small outbreak, however, presented features which do not appear to have been described in this country.

Case-reports

Case 1.—A fitter, aged 54, seen in consultation on Sept. 8, 1954, had been perfectly well until ten days previously when on return from a football match he was suddenly seized with intense vertigo. At the same time he began to vomit. Vomiting persisted for three days, and he remained in bed since any change of posture caused renewed vertigo. Two days after the onset, following a bout of vomiting, he noticed diplopia which persisted and did not vary with ocular movement. At the same time he was aware of transient attacks of tinnitus in the right ear, but he had not noticed any deafness. He had had no headache or other symptoms, and he remained afebrile. He had had no previous illnesses of significance.

On examination his general condition was good, and he was comfortable while lying supine; change of position caused vertigo, though this was less severe than previously. The cardiovascular system was normal; blood-pressure 130/80 mm. Hg with no palpable thickening of arteries. Lungs and abdomen were normal. There was no neck rigidity; the optic discs were clear; there were no retinal changes; pupil reactions were normal; eye movements appeared full and there was no nystagmus, but diplopia was present throughout the range of eye movement; there was no deafness and cranial nerves were otherwise normal. There was no intention-tremor or other evidence of incoördination of arms or legs; tendon reflexes were brisk and equal; power and sensation of all limbs were normal; the abdominal reflexes were present; the plantar responses were flexor. Urine was normal.

The diagnosis at this time appeared uncertain, but it was thought that a small brain-stem thrombosis might account for these developments. After a further week, since there was little improvement in his condition, he was admitted to Doncaster Gate Hospital, Rotherham, for lumbar puncture and further study.

Investigations.—The C.S.F., which was under normal pressure and was clear, contained 14 red blood-cells and 8 lymphocytes per c.mm. and protein 70 mg., sugar 82 mg., and chloride 738 mg. per 100 ml.; the Lange gold curve was normal, and the Wassermann reaction and Kahn test were negative. The erythrocyte-sedimentation rate was 9 mm. in the 1st hour (Westergren); blood-count normal. Radiographs of skull and chest were normal. An ear, nose, and throat surgeon could find no aural abnormality, but an ophthalmologist reported that the diplopia was due to paresis of the left superior rectus.

Treatment and Progress.—The patient was treated with rest, low-salt diet, and continued mild sedation. He slowly improved and left hospital after a six-week stay. Fourteen weeks after the onset he was still troubled by diplopia and slight postural dizziness.

Case 2.—A girl student, aged 19, admitted to the Royal Infirmary, Sheffield, on Oct. 5, 1954, had been perfectly well until two days previously when unusually for her she slept late, failing to hear her own alarm clock and two college bells. She was aroused with some difficulty and noticed diplopia. On getting out of bed she tended to stagger to the right, but there was no true vertigo. Twenty-four hours later she developed occipital headache and vomited twice, and she remained drowsy throughout the day. At that time her doctor could find no neurological signs. When admitted to hospital the following morning she was already much better; she was bright and cheerful and free from headache, giddiness, and diplopia, though she described at first some difficulty in focusing objects.

Examination.—On admission her temperature was 99·6°F and pulse-rate 100, but within twenty-four hours these were normal. Routine clinical examination was negative; blood-pressure 120/45 mm. Hg. Urine normal. There was no neck rigidity, and Kernig's sign was negative; pupil reactions were normal, and there was no nystagmus; to ordinary tests eye movements were full although occasional transient ocular

imbalance was observed (full ophthalmic examination a day or two later revealed no ocular paresis); optic discs clear; no deafness. No incoördination or paresis of limbs; tendon and abdominal reflexes normal, and plantar responses flexor; sensation unimpaired. On lumbar puncture the C.S.F.-pressure was difficult to record but appeared lower than normal. The C.S.F. was clear and contained no excess of cells; the protein content was 30 mg. and sugar 65 mg. per 100 ml.; the Lange gold curve was normal. White blood-cells numbered 5000 per c.mm. with normal differential count.

Progress was uneventful, and the patient returned to her training-college after a week's stay in hospital, by which time she was free of symptoms. She has remained well since. The diagnosis again was in doubt: mild encephalitis was thought to be a possibility, but disseminated sclerosis could not altogether be excluded.

Case 3.—A poultry-farmer, aged 27, admitted to the Royal Infirmary, Sheffield, on Oct. 20, 1954, had been very healthy until six days before admission, when he had been suddenly seized with vertigo while going to bed. The vertigo persisted; he remained in bed, and the following night was woken by vomiting. During the next few days he improved slightly and did not again vomit, but on the day before admission the vertigo was more pronounced and his doctor noted widely dilated inactive pupils. There was no complaint of headache or diplopia, but there was occasional tinnitus in the right ear.

Examination.—On admission his general condition was good and he was afebrile. Routine clinical examination was negative; blood-pressure 132/64 mm. Hg. Urine normal. There was no neck rigidity, and Kernig's sign was negative; pupils of normal size and active; optic discs clear; eye movements were full, but pronounced rotary nystagmus was present, exaggerated by extension of the head and on looking to the right; there was no deafness or evidence of local ear disease. Examination of the central nervous system otherwise revealed no abnormality; power and coördination of limbs was unaltered, abdominal and tendon reflexes were normal, and the plantar responses were flexor, and sensation was unimpaired. On lumbar puncture the C.S.F., which was clear and under normal pressure, contained 1 cell per c.mm., and protein 30 mg. and sugar 55 mg. per 100 ml.; Lange gold curve was normal. White blood-cells numbered 8000 per c.mm. with a normal differential count.

Progress.—There was at first little improvement in the vertigo, and once sudden vomiting without warning followed a bout of retro-orbital headache. Anti-histamine drugs appeared to bring some relief, and after a week nystagmus had ceased and recovery was well established; and after ten days in hospital the patient returned home. When seen six weeks later he reported himself fully recovered apart from a tendency to slight postural dizziness.

Case 4.—A shop assistant, aged 25, seen in consultation on Oct. 22, 1954, had been well until three days previously when in the evening she had occipital headache and felt slightly dizzy. While at work the next morning she developed without warning acute vertigo and felt sick but did not vomit. Returning home with difficulty she went to bed, where the vertigo returned on any change of posture; but she did not notice tinnitus. The following morning she complained of diplopia and had some left-sided retro-orbital headache, but the vertigo was considerably improved.

On examination her general condition was good, and she was not greatly distressed. There was no fever. Routine clinical examination was negative; blood-pressure 140/85 mm. Hg. The urine was normal. There was no neck rigidity, and Kernig's sign was negative; both pupils were widely dilated and reacted only very slightly to light and on accommodation; there was evident paresis of the left internal rectus muscle and gross rotary nystagmus on lateral eye movement, most distinct to the right; optic discs and retinæ were normal; there was no deafness or other abnormality of cranial nerves. Power and coördination of limbs were unaffected; tendon and abdominal reflexes were normal, and the plantar responses were flexor; and sensation was unimpaired.

Investigations.—The patient was admitted the next day to Doncaster Gate Hospital, Rotherham, where lumbar puncture yielded clear C.S.F. under normal pressure; this contained no excess of cells, the protein content was 30 mg. per 100 ml., and other constituents were normal. White blood-cells numbered 6200 per c.mm. with normal differential count. An ophthalmologist confirmed the paresis of the left internal rectus and in addition drew attention to the presence of slight left-sided ptosis and paresis of the left inferior oblique muscle.

Progress.—The patient recovered rapidly, and within a further twenty-four hours was free from vertigo, nausea, and diplopia. At the end of a week she was discharged from hospital free of symptoms and with complete recovery of eye movements. When seen a fortnight later she had no complaints.

Case 5.—A married woman, aged 53, seen in consultation on Oct. 23, 1954, had been in excellent health until two days previously, when while sitting in a friend's house she was suddenly attacked by acute vertigo accompanied by vomiting. She was helped home and had remained in bed since, lying very still because any change of position brought renewed vertigo. She had not vomited again but noticed tinnitus in the left ear. There was no diplopia, but photophobia was quite pronounced. Headache had not been a feature.

On examination her general condition was good and routine examination was negative; she was afebrile; blood-pressure 103/70 mm. Hg. The urine was normal. There was no neck rigidity, and Kernig's sign was negative; pupils were normal, and optic discs clear; eye movements were full, but coarse nystagmus occurred on looking to the right. There was no deafness and cranial nerves otherwise were normal. There was no loss of limb coördination and power; abdominal reflexes were present, and tendon reflexes were unaltered.

Investigations.—The patient was admitted the same day to Doncaster Gate Hospital, Rotherham, where lumbar puncture yielded clear C.S.F. under normal pressure, containing no excess of cells and protein 55 mg. per 100 ml; the Lange gold curve was negative. White blood-cells numbered 4600 per c.mm. with normal differential count.

Treatment and Progress.—Despite treatment with a low-salt diet and anti-histamine drugs the subjective vertigo was slow in clearing, but nystagmus persisted for only twenty-four hours after admission. The patient returned home largely recovered after twelve days in hospital, and when seen a fortnight later was complaining only of slight dizziness.

Discussion

The use of the term "outbreak" for a series of 5 cases may seem a little portentous, but there is some evidence to justify this description. In the first place, with clinical features so remarkably similar it can scarcely be doubted that each of these patients had the same disease, and although a span of six weeks separated the appearance of the first and last cases, the last 3 cases were seen virtually on successive days. Lively expectations of an epidemic were not realised, and as far as can be discovered there has not been a single further case. All of the patients came from one locality, living either in or within a few miles of Rotherham, and during the same period no similar case appears to have been seen by consultant colleagues among the adjacent and much larger population of Sheffield. It has been impossible to trace any connection or common source of contact among these 5 patients, each of whom came from an entirely different walk of life.

Fundamentally these cases conform exactly to the pattern noted previously. Thus, the patients were apparently all in excellent health up to the time of onset, and in 3 the onset was dramatically sudden. Invariably the initial symptom was vertigo, or at least severe giddiness, followed rapidly by vomiting of cerebral type or nausea. None had ear disease or deafness, but 3 noticed transient tinnitus. Nystagmus was observed in 3 cases; in 2 of these it was of rotary and labyrinthine type intensified by extension of the head, but in no case was there any loss of coördination.

The single feature which seems to distinguish this outbreak from any previously reported in this country is the occurrence of diplopia. Of the 5 patients in this series 3 had diplopia, and in 2 of these undoubted ocular pareses were observed. There is a strong probability that a 4th patient (case 3) also had involvement of the oculomotor nerve, for dilated inactive pupils were

noticed by his doctor at one stage, and these were also observed in one of the patients (case 4) with external ocular pareses. In the account of the Danish outbreak (Dalsgaard-Nielsen 1953) diplopia or pupil changes are mentioned in not more than 3 or 4 of the 21 cases reported; in comparison therefore the incidence of these complications in this small outbreak has been much higher.

Obviously it should be more widely known that oculomotor control may also be disturbed in this condition; for without this information the diagnosis, at least in isolated cases, is bound to cause difficulty and probably some anxiety. It follows also, in view of the wider neural involvement shown by these cases, that the description "acute labyrinthitis" is no longer acceptable. On the other hand, in view particularly of the consistent failure to demonstrate any excess of cells in the C.S.F., some may find the concept of this disease as a "form of encephalitis" equally difficult to support. At present, therefore, any description had best be non-committal, and for this reason the title "epidemic vertigo" has here been preferred.

Summary

A small outbreak of the disease usually referred to in this country as "acute labyrinthitis" is described.

This outbreak was confined strictly to one locality, but no source of common contact could be identified.

An unusual feature was the high incidence of oculomotor disturbance—a complication, observed occasionally in a recent Danish epidemic, which has apparently not hitherto been reported in this country.

It is suggested that until more is known of the ætiology of this disease the title "epidemic vertigo" is preferable to "acute labyrinthitis."

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THE HAIR OF THE PILONIDAL SINUS

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SINCE Warren (1854) first described the pilonidal sinus a century of speculation has not finally decided its mode of origin. Various developmental theories have been put forward from time to time (Hodges 1880, Wendelstadt 1885, Herrmann and Tourneux 1887, Bland-Sutton 1922, Oehlecker 1926). The embryology of the sacral region has been under more recent review (Kunitomo 1918, Kooistra 1942). The view of Patey and Scarff (1946, 1948) that the pilonidal sinus is essentially traumatic emphasises the weak foundations on which the developmentalist theories are based.

In the present study the hair in the pilonidal sinuses was examined to determine its origin. The premises were these:

(1) If the sinus is a developmental anomaly, the hair should be growing out towards the skin surface in a more or less orderly fashion.

(2) If the pilonidal sinus is the result of a mechanism such as was suggested by Patey and Scarff (1946), hairs found in the sinus should be lying at random in relation to the axis of the sinus.

Methods and Materials

Seven sacral pilonidal sinuses, removed at operation, were subjected to serial section. The sections, 15 μ thick, were stained with Heidenhain's 'Azan' to demonstrate the structure of the hair cuticle.

Direction of hair growth can be deduced from the direction in which the cuticular scales lie. In practice, if hairs are cut obliquely and appear as oval discs, and if infection blurs the cuticular outline, difficulty may be experienced in deciding which way a hair has been growing. The following criteria are then helpful:

(1) The medulla is usually nearer the proximal extremity of the hair disc (fig. 1).

(2) The basal edges of individual hair scales appear more closely packed than their distal cusps. The former are smooth, the latter ragged.

(3) More dye tends to concentrate over the proximal half of the hair disc.

(4) Owing to capillary attraction a dark band of dye is found just distal to the cusp of a scale, but as a result of overlap the proximal scale is just a shade darker than the distal one.

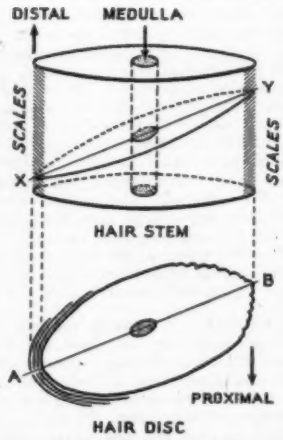

Fig. 1—Oblique section (XY) across hair stem cuts more scales at proximal end (A) than at distal end (B) of hair segment. The former are thus more closely packed than the latter.

Findings

The parallel course of many hairs suggests that they must originate in a fairly circumscribed area. As they are followed to their source (see above), it becomes apparent that they originate in the depths of each sinus. Their deep ends are club-shaped. They may lie free in the lumen of the sinus, or they may still be attached to the sinus wall (fig. 2). In the uninfected sinus their points of attachment may show parakeratosis, which may extend along the sinus wall.

If it is accepted that the fine lanugo-like hair is "shed" hair (the club-like expansions make this virtually certain), all that should remain of the follicles is their root-sheaths. External root-sheaths may be seen soon after a hair has been extruded, the intercellular cement substance characteristically sloping into the lumen of the follicle away from the root-base. The internal root-sheath may, for a time, stick to the extruded hair. Later it is shed and remains as pale loose debris.

Two kinds of epithelial linings are seen. One is thick, highly keratinised, and rich in rete pegs. The other is narrow, pale, and practically devoid of rete pegs; it predominates in infected sinuses, and secondarily extends from islands of the thick original epithelium when inflammation has subsided.

Fig. 2—Two club-shaped hair ends, one still embedded in sinus wall (× 45).

Should inflammation become chronic, masses of granulation tissue are formed, encroaching on the lumen of the sinus, burying the epithelium, and finally absorbing it (fig. 3). With the epithelium hair particles are similarly trapped in the granulation tissue, but, being unabsorbable, they retain their histological identity. They can often be found some millimetres outside the chronic sinus, yet they betray their origin by the common direction of their scales.

The skin overlying the sacral pilonidal sinus contains unusually deep hair papillæ. In a formol-preserved, and therefore shrunk, specimen they may be up to 6 mm. deep, well in the subcutaneous fat. The follicles, though separate from the sinus, may be abnormally large and carry two hairs each. None of these features are demonstrable in the sacral skin of normal controls. It seems probable that they are an expression of the same developmental anomaly which leads to the fully formed sinus. They may be the precursors of undeveloped sinuses.

Discussion

Among developmentalists the precise mode of formation of the pilonidal sinus is undecided. The disparity between tail development and the cephalad movements of the spinal cord and skin introduces so many confusing factors that the segmental orientation of the sacral skin is difficult to assess. Though pilonidal sinuses are sometimes associated with other sacral developmental defects, it is well to remember that such defects often occur in crops; a causal relationship between one and another is impossible to prove.

Our findings on tracing the origin of the hair to the wall of the pilonidal sinus provide evidence that this is a developmental defect. The notorious absence of hair papillæ is no bar to such a view when the hair within the sinus is recognised as "shed." Indeed, the ease with which hair can be teased out of a sinus in the living subject would make any other finding surprising.

Fig. 3—Granulation tissue entering lumen of sinus and absorbing squamous lining (× 50).

Summary

Serial section of pilonidal sinuses has demonstrated that their contained hair originates in their depth, and that the sinuses are therefore developmental defects.

After infection, hair may penetrate the sinus wall and come to lie outside the sinus. Independent hair papillæ in the skin close to a sinus have been found to reach an unusual depth.

I wish to thank Dr. A. D. Morgan for his help and advice; and Mr. F. F. Wilson and Mr. M. Cuthbertson for their help with the histological preparations.

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CEREBROSPINAL FLUID IN CARCINOMATOSIS OF THE MENINGES

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CEREBROSPINAL fluid (C.S.F.) containing little sugar and much protein and many cells is often regarded as pathognomonic of tuberculous meningitis. That carcinomatosis of the meninges can produce a similar picture has only recently been recognised (McCormack et al. 1953). Apart from Forster (1930) and Platt (1951), who referred to the occasional recognition of tumour cells in the C.S.F., and Jacobs and Richland (1951) and Strange (1952), who reported low sugar levels, few workers have correlated the presence in the C.S.F. of neoplastic cells, much protein, and little sugar with the necropsy findings. The similarity to tuberculous meningitis is illustrated by the following case.

A man, aged 64, was admitted to Seacroft Hospital on June 29, 1954, with the diagnosis of tuberculous meningitis. He had had pain in his trunk and limbs for twelve weeks; this had become worse gradually in the last month, when he had lost much weight and had developed pain and stiffness in his neck. Thirteen days before admission he had a generalised convulsion with a period of unconsciousness. In the past he had been a miner and was in receipt of a pension from the Silicosis Board.

On examination he was pale and wasted, with a very stiff neck and a positive Kernig's sign. His cranial nerves were not affected, his optic fundi were normal, and there were no choroidal tubercles. His right lung showed emphysema with crepitations in the upper zone.

Investigations.—Radiography on July 1 showed pneumoconiosis with parenchymal infiltration of the upper zone of the right lung.

Lumbar puncture on July 1 produced C.S.F. containing lymphocytes 100 per c.mm., sugar 20 mg. per 100 ml., protein 130 mg. per 100 ml., and chloride 570 mg. per 100 ml.

Diagnosis and Treatment.—In view of the history, the clinical state, and the above-mentioned findings tuberculous meningitis was tentatively diagnosed. Systemic chemotherapy and daily intrathecal therapy with streptomycin was begun. Repeated lumbar punctures showed a persistently raised cell-count, much protein, and little sugar (as little as 13 mg. per 100 ml.). Cytological examination showed clumping of the cells on at least one occasion.

Outcome.—The patient died in coma with anuria and jaundice twenty-three days after admission.

Necropsy revealed carcinoma of the stomach with metastases in the leptomeninges, liver, suprarenal glands, and lungs, with associated silicosis, bronchitis, and emphysema. There was no tuberculosis. The meningeal involvement was confined mostly to the region of the basilar artery and the anterior surface of both cerebellar lobes. It was obvious on microscopy only; to the naked eye it would have passed as a healing tuberculous meningitis. The rest of the brain appeared normal.

These necropsy findings are exactly similar to those of McCormack et al. (1953), who attribute the low C.S.F.-sugar level to the large demands of the active neoplastic cells for glucose.

Carcinomatosis can only be distinguished from tuberculosis by finding malignant cells in the C.S.F. This distinction is of importance because the recognition of carcinomatosis saves the patient from the rigours of intrathecal antituberculous therapy.

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RETROSPONDYLOLISTHESIS AS A CAUSE OF PARAPLEGIA

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RETROSPONDYLOLISTHESIS in the dorsilumbar region of the spine is a well-recognised clinical entity which causes local pain in the back and referred pain in the lateral aspect of the buttock. There is often an associated degenerative arthritis of the hip-joint; this may make it difficult to determine whether pain in the region of the hip-joint is due to primary disease of the hips or is referred from the spine.

It is, however, unusual for retrospondylolisthesis to cause serious pressure symptoms and I have not been able to find any report in the literature of actual paraplegia being produced; so it seems worth reporting the following case. Since treating this patient I have seen two further cases of retrospondylolisthesis with slight spasticity of the legs and it is possible that mild degrees of this condition are not uncommon.

A married woman of 66, who was admitted to hospital on April 20, 1954, had had pain in the lumbar region for eight years, and pain in the left hip for six years, with progressive disability. During the last two years she had been able to walk only with assistance and inside the house, with hips and knees flexed. For the last two years she had had intermittent urinary incontinence. One week before admission to hospital the pain in the left hip became worse and she had been bedridden. Her general health until recently had been good but the pain had lately kept her awake and she had lost a considerable amount of weight.

She was a thin, rather querulous woman. Both hips and knees were flexed to 90° and fixed. Both legs were spastic. The tendon reflexes were not elicited; but there were extensor plantar responses on both sides. There was no detectable impairment of sensation. The arms and cranial nerves were normal. X-ray examination showed retrospondylolisthesis of D12 and L1. Cervical myelography showed an almost complete block at the D12–L1 level. (Lumbar myelography was attempted but was unsuccessful owing to ossification of ligaments in the lumbar spine.)

On April 27, 1954, laminectomy of D11, D12, and L1 was performed. The dura mater was found to be constricted at D12–L1; after laminectomy the constriction disappeared and normal pulsation returned below the level of the lesion. A fine rubber catheter could be passed up and down the theca without resistance.

Postoperative progress was slow but steady from almost the day after operation. Pain and cramp disappeared. Spasticity gradually abated and urinary control returned. Flexion deformities of the knees and hips had to be treated but she was ultimately discharged from hospital in September walking unaided and only slightly spastic.

Preliminary Communications

STIMULATION OF NATURAL IMMUNITY TO ESCHERICHIA COLI INFECTIONS

OBSERVATIONS ON MICE

IT has been recently shown[1] that differences in virulence of *Escherichia coli* strains for mice can be correlated in vitro with the survival-rate of the strains in the presence of mouse serum and complement. In this bactericidal system the avirulent strains were rapidly killed under conditions permitting 100% survival of the virulent organisms.

During attempts to isolate the bacterial substrate for this reaction, a remarkable effect of the bacterial cell walls came to light. After injection of 0·05–0·2 mg. of *Esch. coli* cell walls, either intraperitoneally (I.P.) or intravenously (I.V.), mice showed greatly enhanced susceptibility to *Esch. coli* infection if challenged I.P. within 2 hours but greatly reduced susceptibility if the challenge was delayed for 24 hours. This initial decrease in their resistance, followed in 24 hours by a great increase, is believed to be due to the rapid neutralisation by the *Esch. coli* cell walls of the normally effective serum defence mechanism, which within 24 hours is restored to a higher level than normal.

EXPERIMENTAL

Preparation of Cell Envelopes.—Strains of *Esch. coli* or *Salmonella typhimurium* were used.

They were harvested in saline from 24 hours' growth on nutrient agar. The suspensions were heated at 60°C for 30 min. and then centrifuged, washed, and suspended in saline to an approximate dry weight of 30 mg. bacteria per ml. 10 ml. of this suspension was shaken in the Mickle shaker together with 5 ml. of ballotini beads for 40 min.[2] The glass beads and any intact bacteria were removed by centrifugation for 20 min. at 3000 r.p.m. in an M.S.E. minor angle centrifuge. The turbid supernatant was further centrifuged at 14,000

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Cell walls *Esch. coli* 2380 dose	Time before challenge	No. of organisms in challenge dose	Mice dead within 48 hr. Treated *	Controls *
0·1 mg. I.P.	30 min.	5000 *Esch. coli* 2380	2/3	0/3
		500 ,,	2/3	0/3
		50 ,,	1/3	0/3
		5 ,,	2/3	0/3
0·2 mg. I.P.	48 hours	2×10^5 *Esch. coli* V_2	0/6	3/3
		2×10^5 ,,	0/6	3/3
		2×10^4 ,,	0/6	3/3
0·05 mg. I.P.	48 hours	2×10^6 ,,	1/2	3/3
		2×10^5 ,,	0/5	5/5
		2×10^4 ,,	0/5	5/5
		2×10^3 ,,	0/2	2/2
0·1 mg. I.V.	48 hours	2×10^6 *Esch. coli* V_2	1/3	3/3
		2×10^5 ,,	0/3	3/3
		2×10^4 ,,	0/3	3/3
		2×10^3 ,,	0/3	2/3

L.D.$_{50}$ values in normal mice, results of approximately 100 mice for each strain: V_2 10^3 organisms; V_3 10^3 ,,; 2380 10^4 ,,

* In these columns numerators indicate numbers of deaths, denominators indicate total mice tested.

r.p.m. in a Serval high-speed angle centrifuge for 1 hour, which deposited the bacterial cell walls. These were suspended in 0·5 *M* disodium hydrogen phosphate and treated with 0·1% *w/w* pure trypsin under toluene for 7 days, after which the insoluble material was deposited by centrifugation and washed once with saline and once with distilled water before being dried from the frozen state.

Virulence tests of *Esch. coli* strains were carried out as described previously [1] by I.P. injection of dilutions of the challenge culture suspended in 1·75% hog gastric mucin + 0·4% charcoal.

Results.—The table shows the effect of injecting various quantities of cell walls prepared from *Esch. coli* 2380 on the survival of mice after challenge with three virulent strains of *Esch. coli*. It will be seen that, 30 minutes after injection with the cell walls of *Esch. coli* 2380, mice may be killed by as few as 5 *Esch. coli*, whereas 10,000 organisms are required to kill a similar proportion of normal mice. On the other hand, 48 hours after injection, mice challenged in the same way may survive several thousand times the dose lethal for normal mice.

This effect is non-specific among *Esch. coli* strains, it is not associated with any rise in the serum-agglutinin titre against *Esch. coli*, and there is no increase in the titre of complement. The immunity is at a maximum 2 days after injection of the cell walls and has fallen to the normal level about 5 days later. The protection can be passively transferred by the serum of one mouse to another.

The cell walls prepared from antigenically unrelated virulent or avirulent *Esch. coli* strains or from various strains of *S. typhimurium* all produce the same effects in varying degree. Hence either a specific factor responsible for this effect is widely distributed in the coliform and salmonella families or else similar factors occur in the different members of these two bacterial species. The *Esch. coli* factor is extremely heat-stable, biological activity being little impaired by boiling for 7 hours.

When 1 ml. of unheated guineapig serum was treated with 0·5 mg. of *Esch. coli* cell walls, at 37°C, the complement titre was reduced from 60 hæmolytic units to zero, and this decrease was shown to be due to the disappearance, presumably by adsorption, of the C_3 fraction of complement. This phenomenon is analogous to the removal of the C_3 fraction when serum is treated with the yeast polysaccharide "zymosan." [2] In fact, injection of mice with zymosan will exactly reproduce the effects noted here with *Esch. coli* cell walls. Moreover rats which are normally resistant to infection with *Esch. coli* strains + mucin become susceptible soon after I.P. injection of approximately 50 mg. of zymosan. Thus six rats, when challenged after 30 minutes with 100,000 cells of *Esch. coli* 2380 + 1·75% hog mucin, were all obviously ill after 24 hours and two of them died; six normal control rats appeared well and survived.

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DISCUSSION

Most animals are capable of removing enormous numbers of *Esch. coli* from their tissues both by phagocytosis and by serum killing. If the cellular defences are inhibited by the presence of mucin, the serum is still extremely effective in killing most *Esch. coli* strains. There is apparently an efficient serum system capable of acting on some substrate in *Esch. coli* cells, and it is natural that, in acting upon the organisms, the chemical system in the serum—whether enzymic or not—will be attached to and temporarily removed by the bacteria. If the bacterial substrate can be provided in some form other than living bacteria, the serum system will probably be adsorbed by it; and, given the correct amounts, the greater part of the serum killing system might perhaps be removed, so that its efficiency in destroying viable *Esch. coli* cells would be seriously impaired and the animal would become highly susceptible to infection.

Pillemer et al.[4] have shown that treatment of various animal sera with zymosan at 37°C not only removes the C_3 component of complement but also removes another immunity factor, which they call properdin.[5] They have produced evidence that the bactericidal action of fresh serum is due jointly to its complement and to its properdin content. When animal species are arranged in a series according to the properdin content of their sera, this order corresponds roughly with the level of natural immunity of the species. Thus rats show the highest and guineapigs the lowest properdin titres. More recently Pillemer has shown that injection of mice or rats with either our *Esch. coli* skin fraction or with zymosan, following the procedure described here, results in an immediate fall in the serum-properdin level to about 20% of its normal value; the level is then rapidly restored and after 48 hours may reach a value four times higher than the original normal level.[6] This finding suggests that the initial fall and subsequent rise in the serum-properdin level, as demonstrated by Pillemer following injection of zymosan or *Esch. coli* cell walls, may influence or be the direct cause of the changes in resistance of mice to *Esch. coli* infection, as found in the present experiments. If so, it means that, in the mouse, under the experimental conditions used, the predominating defence mechanism against this infection must involve properdin and complement. Whether or not this mechanism plays a part in other infections has still to be determined. We may, however, note that Pillemer and his colleagues have found that injection of zymosan into mice or rats greatly decreases their susceptibility to the bacteræmia and death which follow irradiation of the whole body.[7]

Sir Almroth Wright repeatedly spoke of a "negative phase" following inoculation of humans or animals with typhoid vaccine. This negative phase was demonstrated by a decrease in the bactericidal power of the blood, lasting up to several days according to the dose of vaccine employed. Where a small dose was injected a great increase in the bactericidal power of the blood was occasionally noted within two days of injection.[8]

I am grateful to Prof. Louis Pillemer, of Western Reserve University, Ohio, for a gift of zymosan and for providing

4. Pillemer, L., Blum, L., Lepow, I. H., Ross, O. A., Todd, E. W., Wardlaw, A. C. *Science*, 1954, **120**, 279.
5. See *Lancet*, 1954, **ii**, 587.
6. Pillemer, L. Personal communication.
7. Ross, O. A., Moritz, A. R., Walker, C., Wurz, L., Todd, E. W. Pillemer, L. *Fed. Proc.* (in the press).
8. Wright, A. E. Antityphoid Inoculation. London, 1904; p. 11

unpublished data. I am also indebted to my colleagues—to Dr. P. D. Cooper for the preparation of some of the *Esch. coli* cell walls, to Dr. D. Hobson for a supply of zymosan, and to Mr. C. R. Jenkin for technical assistance.

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HYDROCORTISONE IN TREATMENT OF ALLERGIC CONJUNCTIVITIS, ALLERGIC RHINITIS, AND BRONCHIAL ASTHMA

HYDROCORTISONE has, in contrast to cortisone, a *local* effect in certain disorders of the skin and in arthritic joints. We therefore thought it possible that it would have a beneficial local action on the mucous membrane in allergic disorders. We briefly describe here the treatment with hydrocortisone of 4 patients with allergic conjunctivitis, 15 with allergic rhinitis, and 15 with bronchial asthma. In all of these patients the disorder had been present for over a year, and in most for several years; and there had been little variation in the condition throughout the year—a factor which helped us greatly to assess the results.

Hydrocortisone has only lately become available in this country. In North America it has been found superior to cortisone in a number of cases of vernal catarrh,[1 2] and at least equal, if not superior to, it in allergic conjunctivitis.[3]

Allergic Conjunctivitis

Our 4 patients with typical allergic conjunctivitis, who had previously had local cortisone without success, were treated with daily instillations of hydrocortisone acetate (2·5 mg. suspension in 1 ml. physiological saline). 2 of these patients also had asthma and eczema, and were sensitive to various allergens. For several years they had had continuous itching of the eyes and a viscous conjunctival secretion causing the eyelids to be glued together on waking. The conjunctiva was slightly injected and had a milky œdematous appearance, particularly distinct in the lower fornix. 2 drops (about 0·02 mg.) of the hydrocortisone suspension was instilled three times daily for two days.

In the 1st case the symptoms disappeared completely for three weeks. There was a recurrence after this time, and further treatment resulted in relief as before.

In the 2nd case the symptoms were also relieved but recurred five days after cessation of treatment. Continuous relief was achieved with a maintenance dose of 1 drop instilled every fifth day. When an anti-histamine drug was given by mouth at the same time, this drop was required only every eighth or ninth day. The conjunctivæ looked less red, but the milky œdematous appearance was still present.

The 3rd patient, who showed the same signs but suffered only from excessive lacrimation, was treated in the same way, and the day-time lacrimation improved within forty-eight hours, after which there was negligible lacrimation at night.

The 4th patient, whose allergic conjunctivitis was proved by the history and by conjunctival test to be due to cat-fur, also improved under the treatment; but itching and redness did not disappear as in the first 2 patients.

In the first 2 patients treatment was started with one eye only. When there had been spectacular improvement of this eye both patients reported spontaneously that the other eye had also improved at the same time, but only partially.

Nasal Allergy

The patients with nasal allergy had had rhinitis constantly for over a year. All showed a typical swollen, boggy, mauve-white, nasal mucosa. In most cases the disorder was so severe that the use of decongestant drops could not be avoided; and in most local treatment with zinc ionisation, cautery of the inferior turbinate, removal of polypi, or desensitisation had given no relief. Anti-histamine drugs had, as usual, stopped sneezing and running of the nose, but had left the swelling of the mucosa and therefore the blockage unchanged.

These patients inhaled daily into their nostrils the contents of a half or a whole celluloid capsule with 15 mg. of hydrocortisone powder, from an Upjohn powder inhaler. Every one or two weeks their nasal mucosa was inspected. A control period was obtained by interrupting the treatment for some weeks, or, in many cases, substituting an inert powder of similar taste for two to three weeks.

In 11 of the 15 patients an important subjective improvement ensued. They were able to breathe freely through their noses and could either dispense altogether with nasal decongestants or limit their use to twice in twenty-four hours. Shrinkage of the nasal mucosa was noted, but the boggy appearance and mauve colour persisted, except in 2 cases where the mucosa appeared normal in some places.

In 1 of these it was thought likely that the normal patches of mucosa corresponded with those sites which were more easily reached by the flow of the inhaled powder. When hydrocortisone was omitted the condition gradually deteriorated in two to three weeks, but it improved two to three days after treatment was resumed.

In most cases treatment was started with one nostril only, using the other as control; often the degree of obstruction was unequal, and the more severely blocked nostril was selected for treatment first. In these cases the improvement was sufficiently distinct to convert the previously "better" nostril into the "worse" nostril.

In 4 patients the treatment was unsuccessful.

1 of these found the powder irritating to his nose and omitted it. In another patient a generalised urticarial rash appeared within twenty-four hours of the start of the treatment, which was abandoned. Of the remaining 2 patients, 1 did not use the powder regularly.

Bronchial Asthma

In the treatment of bronchial asthma the chief problem is the difficulty of depositing enough hydrocortisone on a large surface-area of bronchial mucosa. It was decided to try inhalation of hydrocortisone powder with a main particle size of under 5 μ rather than inhalation of an aerosol. The amount of hydrocortisone powder inhaled through the mouth from a powder inhaler was 15 mg. or 7·5 mg. per day.

All 15 patients had perennial severe bronchial asthma that demanded constant use of anti-histamine drugs at bed-time and of aminophylline or ephedrine during the day. In addition, to counter intercurrent bouts of spasm, they used an isoprenaline nebuliser 3–12 times in the twenty-four hours. Only those patients were included whose condition had been stable for at least six months, and in whom the number of isoprenaline inhalations was approximately the same every day; and this number was used to gauge the severity of their asthma. After using hydrocortisone powder for two to three weeks these patients were given cartridges containing inert powder for the same period; after this some of them were changed back to hydrocortisone.

In 11 patients the treatment caused definite improvement of the asthma, the number of isoprenaline inhalations dropping to half or less. When inert powder was substituted the improvement persisted for up to three weeks, and when the asthma had returned to its former severity resumption of hydrocortisone again brought relief. An increase in the hydrocortisone dosage above 15 mg. per day did not cause further improvement.

In 3 patients the treatment had no effect.

The 15th patient had been on a maintenance dose of 50 mg. oral cortisone per day, and was using, in addition, 4 amino-

1. McDonald, P. R., Leopold, I. H., Vogel, A. W., Mulberger R. D. *Arch. Ophthal., N.Y.* 1953, **49**, 400.
2. Gordon, D. M. *Amer. J. Ophthal.* 1954, **37**, 533.
3. Steffensen, E. H. *J. Amer. med. Ass.* 1952, **150**, 1660.

phylline suppositories and 8–10 isoprenaline inhalations daily. With this régime her condition did not vary for many months. When the 50 mg. of oral cortisone were replaced by 15 mg. of hydrocortisone powder a striking improvement occurred within two days. The number of inhalations dropped to 2 per twenty-four hours, and the aminophylline could be omitted. With 7·5 mg. of hydrocortisone powder the condition was slightly worse than on 50 mg. oral cortisone; but with 10 mg. of hydrocortisone it was exactly the same and the dosage could be maintained at this level for many weeks.

Since the systemic activity of hydrocortisone is, at most, double that of cortisone,[4] the effective equality of 10 mg. of hydrocortisone powder with 50 mg. of oral cortisone suggests a local action of the former. In the great majority of the cases hydrocortisone definitely improved the condition but did not completely abolish the asthmatic obstruction.

DISCUSSION

Our experience with local hydrocortisone in the treatment of allergic eye, nose, and bronchial disorders is too limited for definite conclusions about optimum dosage and method of application, and the type of patient likely to benefit most. But we are sure that in these conditions it can be of therapeutic value. Local treatment has the advantages that the need for large systemic doses of cortisone, with the attendant dangers of systemic therapy, is avoided, and that it is more economical.

We are indebted to the physicians of the chest department for access to their patients; to Messrs. Upjohn of England, Ltd., for the supply of hydrocortisone powder and the powder inhaler; and to Messrs. Roussel Laboratories for the supply of hydrocortisone suspension. One of us (H. H.) was assisted by a personal grant from the Medical Research Council.

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4. Arbesman, C. E., Richard, N. B. *J. Allergy*, 1954, **25**, 306.

Reviews of Books

Mental Health and Human Relations in Industry

Editor: T. M. LING, M.A., D.M. Oxfd, M.R.C.P., medical director, Roffey Park Institute of Occupational Health and Social Medicine. London: H. K. Lewis. 1954. Pp. 265. 21*s*.

INDUSTRIALISATION, which has brought profound changes in individual and group relationships, is thought to carry with it a higher incidence of psychological and psychosomatic disorders. High rates of absenteeism, industrial fatigue and accidents, and sickness and neurosis are, it seems, an almost inevitable part of modern society; but perhaps they were of any society. Elton Mayo, as long ago as 1924, showed that the level of production and the morale of a group of factory workers correlated more highly with their sense of importance and responsibility to the community than with the hours worked or the level of pay. Since then attention has been directed to the study of the inter-relationships of men and groups rather than of the single worker. Many recent researches suggest that the employee often feels dissatisfied because he has no sense of belonging to a group, or because he has no status. He feels insecure and frustrated and cannot adapt himself to his surroundings. The most satisfactory industry is one composed of small primary groups whose interests correspond with those of the concern as a whole.

Dr. Ling has edited a collection of essays, by authorities on industrial research and psychology, dealing with mental health in industry from many different aspects. He himself suggests that wages and security, prestige and approval, and the value and creativeness of the work itself, as well as the sense of belonging to a group, are needs which must all be satisfied to ensure the mental health of industrial workers. In meeting these needs the medical officer, the psychiatrist, the personnel manager, and representatives of industrial management have interdependent rôles to play—rôles which are fully discussed by the various contributors. This is a useful and informative book.

The Vitamins

Chemistry, Physiology, Pathology. Vol. II. Editors: W. H. SEBRELL, jun., director, National Institutes of Health, Bethesda, Maryland; and ROBERT S. HARRIS, professor of biochemistry of nutrition, Massachusetts Institute of Technology, Cambridge. New York: Academic Press. 1954. Pp. 766. $16.50.

THE second volume in this new series of reference works on the vitamins deals, in turn, with choline, the vitamins D, essential fatty acids, inositols, the vitamins K, nicotinic acid, and pantothenic acid. It is closely modelled on the first volume,[1] and, like its predecessor, owes much to successful coöperation between the editors and contributors. Each section on each vitamin has been written by an expert, yet overlapping has been largely avoided. Although the main emphasis is on the chemistry and physiology of the vitamins, their occurrence in Nature, their pharmacology, and the effects of deficiency in man and animals are also discussed, and on the whole a comprehensive account is given of present knowledge. If the third and final volume reaches an equally high standard, the series should be a valuable source of well-documented, up-to-date information. Both volumes are well printed and illustrated and carry author and subject indexes.

Foundations of Surgery

GEORGE PERKINS, M.C., M.CH., F.R.C.S., professor of surgery, London University. Edinburgh and London: E. & S. Livingstone. 1954. Pp. 236. 10*s*.

"Surgery for Toddlers" is the alternative title which Professor Perkins, in his preface, offers for his useful and amusing little book. It is intended for the student who has just finished his anatomy and physiology and is starting, in that mood of relaxation which follows a major examination, his first year of clinical work. Here is a small, agreeable guide to the country which lies ahead, something which he can read (and which, thanks to its dignified title, he can be seen reading) in the train, something which points out the main roads and gives him the lie of the land without luring him into fascinating but bewildering byways. It is written in short, brisk, and often amusing sentences, and it is full of memorable and important facts. Nothing could be better designed for warding off the slothful habits "natural," as Professor Perkins remarks, "to most medical students."

Treatment of Acute Poliomyelitis

2nd ed. Editor: WILLIAM A. SPENCER, M.D., department of pediatrics, physiology, and physical medicine, Baylor University College of Medicine. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1954. Pp. 134. 27*s*. 6*d*.

THIS small book summarises a course of lectures on the treatment of acute poliomyelitis, delivered at the South-western Poliomyelitis Respiratory Center, Texas.

The 23 contributors represent all specialties associated with the disease—with the exception of anæsthetics, which has not yet come to play much part in the treatment of poliomyelitis in the U.S.A. Hence there is no mention of positive-pressure respiration through a cuffed tracheotomy tube. There is much else to be learned from these pages, however. The reader gains an instructive insight into an American

1. See *Lancet*, 1954, ii, 582.

respiratory centre with all its functions, from nursing to biochemical studies. There is a good account of glossopharyngeal breathing by which the patient learns to force air down his trachea by a movement of his mouth and throat, pumping one mouthful after another into his lungs until they are well distended, and then breathing out. Another interesting device is "the vacuum cleaner assisted cough" for respirator patients. The positive end of a vacuum cleaner is led into the tank respirator in such a way that a positive-pressure phase of up to 40 cm. of water is reached. The patient is taught to hold his breath as the pressure rises and then to cough at the highest pressure.

Those who treat poliomyelitis will find in this book many such practical hints. The first known record of a case of poliomyelitis—on an Egyptian plaque—adorns the cover.

Neuro-Ophthalmology (2nd ed. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1954. Pp. 591. £6 6s.).—Prof. Donald J. Lyle's new edition is essentially a new book, about twice as long as the first, and containing some 100 more illustrations. It has even been differently planned, the first half now relating many clinical anomalies to the anatomy of the eye and to the central and vascular connections of the globe, and the rest of the text being given to clinical entities with a rather broader basis. Though the arrangement is not strictly logical, it has the merit of dealing adequately with clinical affections in terms of basic physiology and pathology. The text is competent and the illustrations include many that are good, new, and distinctly original, though a few seem to lack point.

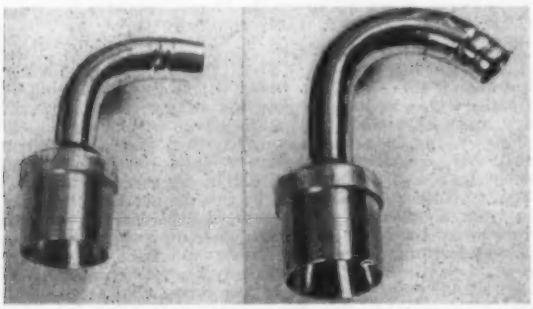
A Practical Manual of Diseases of the Chest (4th ed. London: Oxford University Press. 1954. Pp. 647. 84s.).—Despite the great accumulation of new knowledge since the last edition, Dr. Maurice Davidson and Dr. John H. Friend have accomplished the task of revising this book with a minimum of important omissions and with some reduction in the number of pages. A practical manual should include only information that is fully substantiated and non-controversial; but the indications prescribed here for lung resection fall short of modern surgical practice, and the use of isoniazid surely deserves more space than the effects of climate. The use of cortisone and of corticotrophin in sarcoidosis and bronchial asthma has wisely been left for consideration in a later edition. The book is carefully written and beautifully produced.

Rötgenanatomische Grundlagen der Lungenuntersuchung (2nd ed. Budapest: Akadémini Kiadó. 1954. Pp. 315. Ára 180).—This handsome and finely illustrated volume from Hungary, compiled by Dr. F. Kovats, jun., and Dr. Z. Zsebök, is much better produced than any Russian textbooks on radiology which have reached this country. It is to a large extent an atlas with cross-sections and oblique sections through the lungs related to the corresponding radiographs. The first chapters, on the anatomy of the bronchial tree and the segmental relationships, correspond closely to Brock's work, which is suitably acknowledged. The anatomy of the pulmonary vessels is worked out by angiography, but here there is not sufficient emphasis on the wide intrapulmonary variations. Identification of all the intrapulmonary structures by means of tomography is also attempted. The best sections are those which show by clear drawings the three-dimensional levels of the bronchi and relate them to bronchograms. All the line drawings and all the anatomical specimens, many of which are in colour, are excellent. Many of the radiographs are poor, and not because of the quality of the paper or printing. Either the X-ray equipment or the film emulsion, or both, are inferior to ours.

New Inventions

OROTRACHEAL CONNECTION WITH MINIMAL RESISTANCE

FIG. 1 shows a new design in adult orotracheal connection intended for adults, to minimise resistance to breathing in clinical anæsthesia, and to reduce the mean intrathoracic pressure in patients with respiratory paralysis due to poliomyelitis being treated with intermittent positive-pressure respiration through a cuffed endotracheal tube. This reduction is achieved by the more rapid emptying of the lungs during the expiratory phase owing to absence of resistance.



a *b*

Fig. 1.

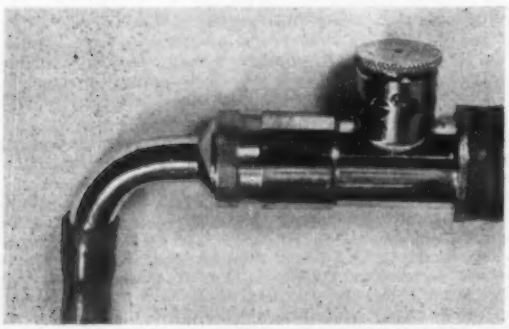


Fig. 2.

Fig. 2 shows how a standard Magill endotracheal tube is connected direct to the valve-mount of a Boyle's apparatus.

Fig. 3 illustrates how all the usual sources of resistance have been removed; the lumen is gradually reduced and kept smooth, and the size of the orifice is similar (actually 0·5 mm. larger) to that of the tube it fits.

The connections are made in three sizes, 8, 10, and 12, to fit tubes size 8 to 12. They are in two shapes: one with a 90° curve (fig. 1*a*) for standard use; and one with a 135° curve (fig. 1*b*) for operations about the head and for poliomyelitis patients.

The resistance to inspiration in these connections is from a quarter to a tenth of that in commonly used connections. There is no measurable resistance to expiration, whereas in standard connections resistance to expiration is much the same as that to inspiration.

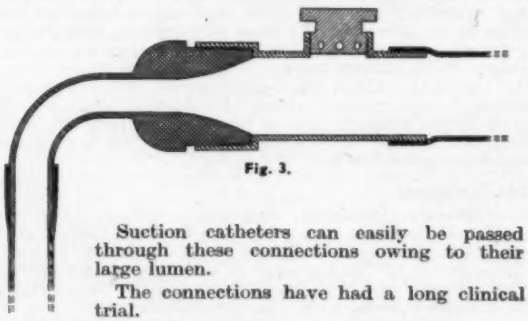


Fig. 3.

Suction catheters can easily be passed through these connections owing to their large lumen.

The connections have had a long clinical trial.

They are obtainable from Messrs. Charles King Ltd.

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JOHN BULLOUGH
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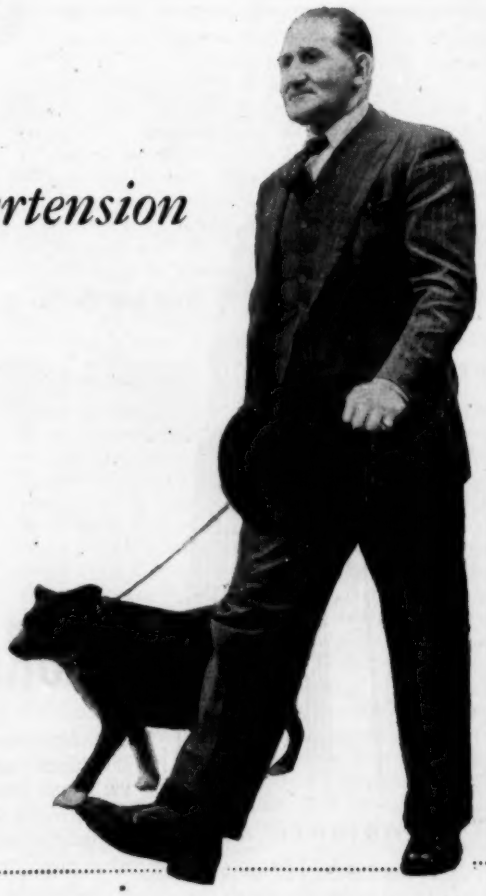
Extended activity in hypertension



It has already been shown that some patients suffering from hypertension may derive great benefit from treatment with the ganglion-blocking agents.

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THE LANCET
LONDON: SATURDAY, JAN. 29, 1955

Total Gastrectomy

THE mortality of total gastrectomy is falling. Until 1929 it was 54%[1]; now MARSHALL and URAM[2] find that it is just over 8%, compared with 35% in the years 1927–43. In this decline there is danger, for surgeons may be tempted to do the operation more often, and, like all amputations, it is not to be undertaken lightly. The only real justification for excising the whole stomach is in an attempt to remove growth in toto. A benign ulcer high on the lesser curve may sometimes call for section through the œsophagus, so that total resection results; but in these circumstances a gastric tube can usually be fashioned from the greater curve or even the distal half of the stomach and the pyloric canal. Again, when at laparotomy it is uncertain whether an ulcer is benign or malignant, total gastrectomy may be inevitable; for frozen sections at the time of operation give little help, since they are difficult to interpret and the specimen may have been taken from an area free of malignant cells.

In submitting a patient to total gastrectomy it must be borne in mind that, though he may not become a frank invalid, he will no longer be the man he was. He may suffer from dysphagia, due either to a disturbance of the hiatal pinchcock with consequent reflux œsophagitis and even pharyngitis or (particularly if infection is present) to deficiency of the vitamin-B complex, which BRAIN and STAMMERS[3] found in 9 of the 33 patients they followed up. Sooner or later he is likely to become anæmic. One thing is certain: he will fail to gain weight and strength, and may perhaps deteriorate in both these respects. It is now common knowledge that this is due to steatorrhœa and loss of nitrogen in the fæces. KELLY and WANGENSTEEN[4] have investigated experimentally the possible effects on absorption of different types of anastomosis. In dogs they made pouches from jejunum; and these proved satisfactory reservoirs but did not stem the loss of weight or prolong survival. They found that only œsophagoduodenal anastomosis was followed by longer survival. WELBOURN[5] has shown that the fat loss differs little whether the œsophagus is anastomosed to duodenum or to jejunum; and this disposes of the idea that fat is lost entirely because the pancreatic juices chase food instead of mixing with it. As regards nitrogen loss JOHNSON et al.[6] report a considerable improvement when food is enabled to pass through the duodenum. When, therefore, after total gastrectomy it is possible to join the œsophagus to the duodenum this should probably be done. All else that can be done is to modify the diet. BRAIN and STAMMERS recommend "fractional" fat feeding, for they found that weight was gained on hourly feeds of small amounts; but BUTLER et al.,[7] on the other hand, suggest that the steatorrhœa be treated with a diet high in protein and sugars and low in fats, in particular avoiding fats containing saturated long-chain fatty acids.

An operation which induces such sequelæ must have substantial advantages in other ways, and these have not yet been established for total gastrectomy. The evidence indicates that for carcinoma of the stomach this operation has no greater effect on survival than partial gastrectomy. FINSTERER's[8] longest survivors had been treated by partial gastrectomy, and so had those in the 1486 cases reviewed by STAMMERS[9]; but these patients were mostly operated on at a time when total gastrectomy was less common. From their statistical data WALTERS et al.[10] concluded that provided that resection clears the primary lesion (and for this purpose total gastrectomy is not always necessary), any recurrence is usually not in what remains of the stomach, but in viscera adjacent to it and elsewhere within or behind the peritoneum. Though pancreas and spleen are sometimes included in total gastrectomy, it is impossible to excise the whole potential field of metastatic deposit. MARSHALL and URAM,[2] who have studied 202 patients with total gastrectomy, of whom 184 had malignant tumours, have also come to the conclusion that total gastrectomy does not increase the proportion of five-year survivors; and they recommend that it should be done only in selected cases. NUBOER[11] has shown that in cases of carcinoma of the cardia an operation which preserves the distal part of the stomach will give a 35% five-year survival. It therefore seems that there is only one indication for total gastrectomy—when the growth involves so much stomach that the primary lesion can be encompassed in no other way—and this holds whether the aim is cure or palliation. Regarding survival the crux of the matter lies in the extent, not of the operation, but of the lesion. If, by luck, the lesion is confined to the stomach there is a chance of eradication by partial or total gastrectomy. If the neoplasm has spread beyond the stomach any excision is in the nature of closing the door after the horse has bolted. Even extensive excisions which include much of the lymphatic field and the parietal peritoneum, spleen, and pancreas may not succeed; for from the stomach, with its copious blood and lymph supply, metastases are likely to be carried in all directions once either stream is entered.

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Isoniazid Resistance

ISONIAZID-RESISTANT tubercle bacilli behave oddly. Some do not grow in the usual culture-media; and many are apparently avirulent in guineapigs and mice. Certain strains require in their environment substances that have catalase or catalase like activity. Such strains themselves are deficient in catalase; and COHN et al.[1] found that this deficiency is closely related to the attenuation of the strain. Thus, strains completely catalase-negative were avirulent in guineapigs, while catalase-positive strains were only slightly or moderately attenuated. MIDDLEBROOK at al.[2] investigated the catalase activity of cultures obtained from patients before and during isoniazid treatment. They found that almost all highly resistant strains were catalase-negative. Some sputum specimens yielded cultures which were less resistant to isoniazid; and these contained catalase-positive strains that were pathogenic to guineapigs. Some cultures clearly consisted of mixtures of catalase-positive and catalase-negative strains. Since catalase-positive resistant strains were not isolated from any patients in whom treatment had been begun with a daily dose of 8 mg. isoniazid per kg. body-weight, MIDDLEBROOK et al. recommend that this dose should be adopted; on this scale the dose for a ten-stone patient would be 500 mg., which is much greater than that usually given in this country. MIDDLEBROOK et al. admit that there is no "unequivocal evidence" that catalase-deficient strains are attenuated in man. In fact, there does not seem to be any such evidence at all. Isoniazid-resistant bacilli seem capable of producing disease. KATZ et al.,[3] for instance, reported a case of rapidly fatal tuberculous pneumonia in which a culture before treatment contained strains resistant to isoniazid and streptomycin. Treatment with both drugs failed to alter the course of the disease. The strains, which were highly resistant to isoniazid in vitro, produced disease in guineapigs; their catalase activity was not determined.

The Medical Research Council workers have investigated the results of sputum-culture and sensitivity tests six to nine months after treatment with isoniazid was discontinued.[4] 43 patients had resistant strains when treatment was stopped after three months, and 20 of these still had positive cultures at the end of a year. On the other hand, only 3 of 22 with sensitive cultures remained positive. This does not suggest that patients with resistant strains in the sputum become culture-negative more rapidly than those with sensitive strains, as might possibly be expected if resistant strains were less pathogenic in the environment in which they originated. The character of the disease was different in the two groups, the resistant group containing more patients with extensive cavitation. Without collapse treatment or resection these would be less likely to become culture-negative; and it is not stated whether either of these measures was applied. It has been reported that isoniazid-resistant strains tend to disappear from the sputum after treatment has been stopped, and hence that the cultures have a lower level of resistance or become fully sensitive. The M.R.C. report does not confirm this. Although there were some differences between the sensitivity of cultures at the end of treatment and six or nine months later, there was no clear evidence of general reversion. It is sometimes forgotten that cultures of tubercle bacilli are heterogeneous populations; and sensitivity tests may record the level of resistance of only the most highly resistant bacilli in an unknown critical proportion. Thus the reported isolation of strains resistant to streptomycin, *p*-aminosalicylic acid, and isoniazid from sputum does not necessarily imply that all, or even the majority, of the bacilli in the culture are resistant. Only a very small proportion may be resistant to each drug or combination of drugs, and most may be sensitive to all. For instance, in the case reported by KATZ, although strains resistant to isoniazid and streptomycin singly were isolated, growth of the culture was completely inhibited by low concentrations of the two drugs together. To explore the drug sensitivity of a culture fully would require many more sensitivity tests than are at present done routinely, and it is doubtful whether the information obtained would be clinically important enough to justify the added work; but fuller quantitative investigation of the bacillary populations in sputum and in the pulmonary lesions themselves would obviously be valuable in research, and improved laboratory methods might help to increase the clinical value. The medium used by MIDDLEBROOK et al.,[1 2 5] for instance, is claimed to reduce the delay in reporting and make it easier on primary isolation to estimate the proportion of bacilli of different degrees of sensitivity. A medium containing charcoal, developed by HIRSCH,[6] is also claimed to give quicker growth and to be easier to prepare and sterilise than media containing egg or albumin; but so far this has not been used for primary isolation.

The bacillary population in the patient's lungs is probably even less uniform than that in the sputum; and its constitution cannot be determined merely by examining the excretion of the bronchial tree. Nor is the lung a simple culture-medium. The growth requirements of isoniazid-resistant bacilli in the body may be different from those in the laboratory. Bacteriological investigations are easier to carry out and simpler to interpret than clinical studies; and there may be a tendency for bacteriological facts to be too readily accepted as guides to treatment. DRESSLER and MIDDLEBROOK, and their colleagues in Denver,[7] have treated a group of patients with advanced pulmonary tuberculosis by brief modified bed rest and early graded activity in addition to isoniazid with or without streptomycin. They found no evidence that treatment in hospital without long rest in bed adversely affected the patients. Their treatment was based on the "conviction that isoniazid holds a unique position"[7] and that "the attenuation of isoniazid resistant mutants of tubercle bacilli for guineapigs and rabbits . . . must have clinical significance."[8] Although unsupported by convincing clinical evidence, these convictions demand investiga-

1. Cohn, M. L., Kovitz, C., Oda, U., Middlebrook, G. *Amer. Rev. Tuberc.* 1954, **70**, 641.
2. Middlebrook G., Cohn, M. L., Schaeffer, W. B. *Ibid*, p. 852.
3. Katz, S., Storey, P. B., McCormick, G. F. *Ibid*, p. 881.
4. Medical Research Council no. 6. *Thorax*, 1954, **9** 254.
5. Cohn, M. L., Oda, U., Kovitz, C., Middlebrook, G. *Amer. Rev. Tuberc.* 1954, **70**, 465.
6. Hirsch, J. G. *Ibid*, p. 955.
7. Dressler, S. H., Anthony, E. M., Russell, W. F., Grow, J. B., Denst, J., Cohn, M. L., Middlebrook, G. *Ibid*, p. 1030.
8. Middlebrook G., Dressler, S. H. *Ibid*, p. 1102.

tion; for there is no firm evidence that isoniazid resistance has a similar significance to streptomycin resistance. Isoniazid-resistant bacilli, as we have said, are odd.

Slum Children Today

> "Families of four or five live in one tenement room; among the exhibits was a drawing of a bedroom, little larger than a cupboard, into which two double beds and a cot could just be crowded; here no less than eight persons slept, ranging in age from twenty years to five or six."

THIS quotation, from an editorial[1] on a London housing exhibition in 1932, may be matched by one from Miss VERA POOLE's article on London slums in the *Manchester Guardian* of Nov. 13, 1954:

> "A family of seven in three small rooms, one room given up entirely to the married daughter and husband, so the remainder (six) sleep like sardines in two beds in the other room."

These verbal descriptions are reinforced by the figures of Dr. VICTOR FREEMAN, medical officer of health for Islington, in his annual report for 1953:

> "Islington is not favoured with large open spaces, and with an average of 76·2 persons per acre it is among the half-dozen or so most densely populated boroughs in the County of London . . . no single ward can serve as a lung for other parts of the borough, and in every ward the population density exceeds the average for the County of London . . . 59% of nearly 82,000 Islington households have no bath of their own and another 20% share a bath. 53% of Islington households share even a water closet . . ."

It seems that we have little to show for our twenty-two years of slum-clearance; and Prof. FRASER BROCKINGTON (p. 244) explains how this has come about. Up to 1939 our schemes had resulted in the demolition of a quarter of a million slum dwellings, which had all been replaced by better houses; but this system of exchange had unfortunately done nothing to reduce overcrowding. Since then we have lost many houses by enemy action, and our population has increased. On the other hand, thanks to much new building, not associated with slum demolition, we are for the first time getting abreast of the overcrowding problem and even—taking the country as a whole—beginning to get ahead of it. To increase this slight lead, or even to hold it, we shall (as he shows) have to work hard and plan well.

In one particular the picture has changed since 1932. In those days all who lived in overcrowded squalid homes presumably did so from necessity; now, Miss POOLE finds, some do it from choice. A single striking instance, from among several reported to her, brings this home:

> A sanitary inspector, called in to investigate a complaint of dampness, found an old house in a filthy state. The family paid £1 a week in rent, and their joint income was £65 a week.

Families, in fact, may grow up in overcrowded and insanitary homes; and while they are at school their parents are given statutory help in rearing them. Then, as one after another begins to earn, and as some marry and bring home wives or husbands who are also earning, the family become affluent. They will not consent to move into better quarters, however, because they cannot be rehoused at the same rent: they have got used to spending too small a proportion of their income on their accommodation. One result is that others who have nowhere to live, and little to pay, cannot even take over poor and cheap accommodation: "Not much more than a year ago," Miss POOLE reports, "a small local school had seventy of its children living with their mothers in night shelters." Clearly it is absurd to subsidise rents for those who can afford to pay higher ones; and she suggests that housing authorities should use their powers more forcibly: "As those in condemned dwellings are evicted to make way for building, so should the well-off families be moved from the slums, leaving for the time being the poor dwellings for the homeless or necessitous." It is doubtful whether the housing authorities have the power to do exactly this, but some way of getting round this difficulty should certainly be found in the interests of the children.

> The family of seven, mentioned above, have more than once refused to be rehoused, on grounds of expense (they pay 12*s.* a week rent). Most of the children have eye trouble because, Miss POOLE says, while they were still at school the mother was not willing to lose time from work in order to take them to the clinic for treatment. All are now earning, and for the last two years the whole family have spent their holidays abroad (where admittedly they have relations).

With both parents at work, children of school age spend a good deal of their time running about the streets; but they are often expected to do the shopping and housework as well. When they leave school and go to work, even this amateur attempt at housekeeping goes by the board, and despite a rising income the home becomes increasingly squalid. But such financially prosperous families are not of course the only, or most numerous, residents of slums: there are many people with young children living willy-nilly under foul conditions. Indeed, conditions are inevitably foul where four or five families share a tap or a lavatory and use a common staircase which it is nobody's business to clean, where coal must be piled in the corner of a room, cupboards can be opened only if a bed is shifted, and the slop-pail and butter-dish are close neighbours. Even more serious than such things as these is the effect, on the physical, mental, emotional, and moral development of children, of dishonest, gross, or terrifying neighbours.

> A family of six, known to Miss POOLE, lived on the ground floor of a bombed house left in a state of disrepair. On the floor above lived several men who boasted of thefts and illegal doings, used filthy language, came in late at night, stamping, shouting, and singing bawdy songs, and passed water on the floor above, so that it dripped through the boards on to the terrified children in their bed.

Life at close quarters, with such ugly realities as drunkenness, crime, incest, brothel-keeping, and the like, damages the developing child in ways which we are only just beginning to recognise and assess. As Miss POOLE rightly comments, "rehousing is not enough: human beings will have to be remade too." She even doubts whether the modern policy of keeping the child in his own home—no matter how bad it is—is always fully justified. A "bad" dwelling may not matter much if it is "illumined by the love of parents who do try to create a home, however poor, for their children"; it is another matter, she suggests, when the home is a filthy room into which the parents hardly ever come except to sleep. The slum problem, in

1. *Maternity and Child Welfare*, 1932, **16**, 13.

fact, as the *Manchester Guardian*,[2] reporting the recent congress of the International Federation for Housing and Town Planning, pointed out, is still grave and pressing, and the question is how to make people in general aware of it.

We are at this time, Professor BROCKINGTON notes, rather well placed for getting something done, since the rate of growth of our population is slowing down, and our numbers in this island are likely within a few decades to become stationary or to decline. In a hundred years or so, perhaps the housing problem will have gone into reverse: how to demolish reinforced concrete at small expense will then be exercising the planners. In the meantime children are being stunted morally and emotionally, as they were once stunted physically, by the pressures of their environment. The ideal of one family one dwelling, put forward by BROCKINGTON, is worth attaining quickly. As things are, we are not only exposing our coming generation to harm: we are laying on ourselves the onerous and costly task of remaking them as citizens.

Annotations

OCCULT UNEMPLOYMENT

THE preregistration year, it is said, may take 15–18 months to complete.[3] The time is lost mostly between the two house jobs; and, whereas formerly the newly qualified could put this "spare" time to good use by acting as locum tenents in general practice, now, without registration, any work outside hospital is barred to them.

This is a serious loss to the community. Just over 2000 were provisionally registered in England and Scotland in 1954, and if 3 months is taken as the average excess over the working year required to obtain registration, then an equivalent of 1000 six-month house jobs is being wasted annually. If all 2000 could be more continuously employed the shortage of junior hospital staff would be felt much less acutely. Considered in terms of highly skilled hands kept idle, the present position represents an unrewarding expense for the nation. No business would permit the waste of such a valuable capital investment.

How can the position be improved? The starting dates of jobs need to be related to the graduation days of universities and colleges. Universities hold graduation days at different times; and, with many other faculties involved, they cannot be expected to fall into line with each other. But most of the newly qualified take up appointments in their own teaching hospital or its surrounding region; so regional synchronisation would be fairly satisfactory. Perhaps appointments to teaching hospitals should be made a short time before those to regional hospitals, in order to give unsuccessful applicants for teaching-hospital posts the opportunity of securing an appointment in the region without much loss of time. Secondly, a proper appointments bureau is necessary—one central place in each region fully informed about the jobs that are to be had. This is a function which many medical schools could fulfil more satisfactorily than they do at present.

If in fact the average is loss about three months, regional boards might be asked to adjust the dates of appointments—though such is the inflexibility of the terms of the 1950 Act that an amending Act might be needed to enable the General Medical Council to register those whose six-month jobs were curtailed in the change-over. Nevertheless Governments will sometimes respond where man-power wastage is adding its toll to man-power shortage.

2. Sept. 21, 1954.
3. See *Lancet*, 1954, ii, 413.

COSMETIC PROBLEM OF ANOPHTHALMOS

REMOVAL of an eye sets a difficult cosmetic problem which has not yet been satisfactorily solved.[1] Unfortunately evisceration or enucleation is often left to the junior staff. After his socket has healed the patient is referred to an artificial-eye clinic, where a lay fitter supplies a concavo-convex prosthetic shell which matches well and will be retained comfortably within the lids. The resulting appearance is satisfactory only in patients with deep-set eyes. Critical patients rightly complain that their new eye has neither the expression nor the appearance of the other eye; it occupies an unnatural position and does not move.

The normal eye rests on a sling of fascia suspended from the medial and lateral orbital walls. This suspensory ligament is formed by a thickening of Tenon's capsule, the fascial envelope which surrounds the eye. The tone of the extra-ocular muscles and the lids prevents forward dislocation of the eye, and the orbital fat forms a cushion behind it. When the eye is removed the volume of the orbital contents is greatly reduced, and the extra-ocular muscles adhere to each other and obliterate the muscle cone. The fat in the upper orbit thus tends to drop, and so the lower fornix accommodates a sloping cushion of fat at the expense of the upper, whose capacity is greatly increased. The usual prosthetic shell is supported in the shallowed lower fornix by the tone of the orbicularis muscle of the lower lid, and in time this lid may become lax and everted because of the weight that it bears. The upper margin of the prosthesis rests on the posterior limit of the enlarged upper fornix; so it tends to lean backwards, and the upper lid lacking the support of the normal eye may droop, with a sunken depression above. In the more fortunate cases the twitching of the fibrosed mass of extra-ocular muscles at the apex of the orbit imparts some movement to the shell, but cosmetically this is seldom adequate.

The ophthalmologist's first difficulty is to replace the eye with an implant which will keep the orbital fat and muscles in a nearly normal position. This has often been attempted, and many materials have been introduced into Tenon's capsule: glass, celluloid, sponge, peat moss, agar-agar, rubber, wire, silk, catgut, hard paraffin wax, and rabbit's eyes have all been suggested. Smooth spheres of acrylic resin or of gold provoke least reaction but tend to migrate. Spaeth [2] recommends Guist's carbonised bone ball, because the fibroblastic reaction which it causes firmly fixes it in its intended location. But, in truth, nothing seems really suitable.

Secondly, the ophthalmologist must provide movement of the prosthesis by linking it somehow to the implant. Cutler [3] tackled this by inserting a basket-shaped acrylic implant with its opening facing outwards, over which he closed Tenon's capsule, muscles, and conjunctiva. These tissues were drawn at operation into the basket by a button sutured to the bottom of the basket. When healed the button was removed and the conjunctiva remained dimpled. The prosthesis had a peg which fitted into the dimple and thus moved with movements of the implant. But the dimple may undergo pressure necrosis or may not form a sufficiently permanent concavity, and the long-term results are not much better than with spherical implants. Other surgeons used partially buried implants [4 5] The conjunctiva covered the implant, leaving an exposed socket into which the prosthesis peg fitted accurately. The movements of these prostheses were excellent; and by this technique the lower fornix was relieved of the weight of the prosthesis. But Choyce [6] followed up 99 patients

1. See Dimitry, T. J. *Arch. Ophthal., Chicago*, 1944, **31**, 18.
2. Spaeth, E. B. Principles and Practice of Ophthalmic Surgery. London, 1948.
3. Cutler, N. L. *Arch. Ophthal., Chicago*, 1946, **35**, 71.
4. Ruedmann, A. D. *Trans. Amer. ophthal. Soc.* 1945, **43**, 304.
5. Cutler, N. L. *Arch. Ophthal., Chicago*, 1947, **37**, 73.
6. Choyce, D. P. *Brit. J. Ophthal.* 1952, **36**, 123.

with such implants and found that 45% were extruded after three years, because of infection. He thought it probable that few such implants would be in situ five years after insertion; and for this reason he recommended discontinuing their use.

Young [7] has had an original idea for solving the cosmetic problem. He removes the contents of the eye and secures within the empty sclera an implant which contains a magnet; the prosthesis also contains a magnet. Young's implant maintains the structure of the orbit in its normal state, and the magnetic attraction of implant to prosthesis imparts a full range of movement. Furthermore, he relieves the lower fornix of its burden by the implant's magnetic support of the prosthesis. Young claims that his prosthesis, which is thin, need not be removed more than once a month, though he does not state on how many cases he bases this conclusion. If the long-term results are satisfactory, and if others can make his rather complicated method work, this technique will constitute a major advance.

CHILDREN'S HOSPITAL TO BE CONVERTED?

A RECOMMENDATION to the board of governors of St. Mary's Hospital that the Princess Louise (Kensington) Hospital for Children should be converted for use by adult patients focuses attention once more on the changing pattern of supply and demand in the hospital services. The development of maternity and child-welfare services, the advances in medical knowledge and technique, and the improvement of economic and social conditions are combining gradually to reduce the number of hospital beds needed for children; and, though this new situation must be a source of satisfaction and pride to all concerned, it also raises the question of which beds ought to be retained and which can be used for other purposes.

The County of London has ten general children's hospitals, with a total of about 1000 beds, and there are probably another 1500 beds in the children's wards of adult hospitals in the county. This gives a ratio of 75 children's beds per 100,000 people; and, though one must remember that London hospitals draw patients from far beyond the county boundaries, this provision is greatly in excess of the 50 per 100,000 suggested by Spence and Taylor in their estimate of the needs in Newcastle.[8] On this score it therefore seems probable that a reduction can safely be made in the number of children's beds in London, and the arguments put before the St. Mary's board by its subcommittee are convincing in so far as they relate to diminution of need. On the other hand the subcommittee's proposals for dealing with this situation by closing one of the children's hospitals are more debatable. Some would say that it would be better to preserve and develop the children's hospitals as centres of pædiatric treatment and education, and to reduce, instead, the number or size of children's wards in the adult hospitals serving the same catchment area—even if the hospitals concerned are not controlled by the same boards or management committees. The possibility of doing this is not discussed in the subcommittee's report; but it will no doubt be raised by the hospital's medical staff committee who are putting their objections to the plan before the governors.

In making their recommendations, the members of the subcommittee were properly influenced by the board's obligation to provide facilities for clinical teaching, and by the relative pressure upon the hospitals under the board's immediate control. From this restricted point of view, the beds in the Princess Louise Hospital may be superfluous; and so may those of several other of the London children's hospitals, the majority of which are also parts of teaching-hospital groups. Nevertheless, all these children's hospitals have traditions and achievements of which they can be proud; and before the drastic and controversial step is taken of converting any of them to other uses, it would be prudent to develop more fully the arguments for and against the preservation of children's hospitals as such, and to review, as a whole, the situation of children's beds in London. To make such a review is perhaps beyond the scope of any one of the 30 different boards and management committees that control the children's hospitals and children's departments of adult hospitals in London, but it should be made before any final decision is reached.

7. Young, J. H. *Ibid*, 1954, **38**, 705.
8. Spence, J. C., Taylor, M. D. *Lancet*, 1954, **i**, 719.

TRANSFUSION OF BATTLE CASUALTIES

IN the latter part of the 1939–45 war blood-loss was generally regarded as the most important cause of shock in battle casualties. Usually the degree of shock was closely related to the volume of blood that had been lost; but occasionally shock was more severe than might have been expected. In some such cases the patients did not respond well even to generous transfusion, and a few died. The question of how many of these might have been saved by even more lavish transfusion has remained unanswered.

In Korea during 1952–53 belief in the importance of restoring and maintaining the blood volume after severe injury led to freer use of massive transfusions of blood. Up to 30 pints of blood was given within twenty-four hours of injury, much of it after bleeding had been controlled. Prentice et al.[1] using the blue dye T-1824 or red cells labelled with Cr^{51}, studied the changes in blood volume after operation and massive transfusion in 53 severely injured men. In 43 the initial body-weight was known, and their normal blood and plasma volumes could be calculated. In only 3 cases did the blood volume rise above normal values—in 2 after 7 litres, and in the 3rd after 1·5 litres, of blood. Of 25 patients of known weight studied with Cr^{51}, 11 had blood-volume deficits of less than 15% after transfusions averaging 3·187 litres; in the other 14 the deficit averaged 32% after transfusions averaging 6·74 litres. Despite these large deficiencies only 3 patients, whose volume deficits were 38%, 43%, and 52%, showed the clinical features of shock. Of the 18 weighed patients whose blood volumes were measured with dye, 14 had deficits of more than 15%, the average deficit being 31% after transfusion averaging 7·785 litres; yet none showed clinical signs of shock, and all did well after operation.

When the patients were grouped according to the sites of their wounds, the importance of muscle injury became clear. In wounds of the limbs there was almost always gross muscle injury, and large volumes of blood were needed during resuscitation and operation. Yet after operation nearly all these patients had a blood volume more than 15% below the calculated volume, and their average hæmatocrit was 36·5%. On the other hand patients with abdominal wounds who had received similar volumes of blood had postoperative blood volumes more nearly normal and an average hæmatocrit of 45·8%. Prentice et al. found that when large masses of muscle were injured large quantities of blood were normally required for resuscitation. But it is remarkable that in a 78-kg. man with a traumatic amputation a blood volume of 2·5 litres on admission rose only to 5·1 litres after an uneventful reamputation with minimal blood-loss and the transfusion of 10·5 litres of blood. In a similar case a transfusion of 3 litres raised the blood volume only from 2·5 litres to 3·9 litres. It seems unlikely that much blood was lost into the tissues damaged at operation. In abdominal wounds blood-loss is chiefly due to damage to vessels in the intestinal wall and mesentery; and bleeding into the peritoneal cavity must be directly and accurately controlled by ligature

1. Prentice, T. C., Olney, J. M. jun., Artz, C. P., Howard, J. M. *Surg. Gynec. Obstet.* 1954, **99**, 542.

at operation. In wounds of masses of muscle in the limbs it is impossible to control all bleeding-points at operation, and the most that can be done is to ligate the obvious, larger vessels; after operation a good deal of blood is lost into the muscles in the margins of the excised wound, and there is always considerable post-operative swelling of the less severely damaged muscle in the region of the wound. Whether this accounts for the lowering of the blood volume by a third found by Prentice et al. is uncertain; but it seems the most likely of their three possible explanations for the discrepancy between blood volume and the large quantities of blood transfused. They have shown that it is unlikely that blood is trapped in parts of the vascular system and is not measured by the methods they used, or that hæmolysis of the transfused or recipient's cells was so extensive as to account for the large deficits.

Of the 53 patients 3 received more than 10 pints of blood and 9 more than 20 pints; yet after transfusion the average deficiency in blood volume was 25%. As the total volume of blood transfused increased so did the discrepancy between the volume administered and the subsequent blood volume, and this difference involved both red cells and plasma. Blood volume did not rise later during recovery, as might be expected if blood had been sequestered during the acute changes after injury and operation. Prentice et al. suggest that further evidence may be obtained by weighing patients before and after resuscitation, in addition to measuring blood volume.

At first sight this report suggests that most severely injured patients are inadequately transfused and that in future much larger volumes of blood should be given; but this impression may not be wholly correct. After transfusion and operation most of the patients were in good condition despite reduced blood volumes, and as the amount of blood transfused increased so did the discrepancy between this and the final blood volume. It is conceivable that much of such large transfusions may be lost into injured tissues and be metabolised there. In severe infection and in peritonitis [2] blood volume may remain persistently depressed despite large transfusions of blood or plasma. The cause is presumably disturbed vasomotor control; and a similar disturbance may follow severe injury.

SMOKE AND SULPHUR

WE are all by now thoroughly convinced that smoke fog is a bad thing—destructive to life, health, and materials; light-obstructing, dirt-begetting, and enormously expensive. We owe warm thanks, therefore, to those who have demonstrated how much harm it does. But it is perhaps a little disappointing that so much of the research in progress is still directed towards amassing more and more gloomy statistics about the effects of atmospheric pollution. As Sir Ernest Smith said to the National Smoke Abatement Society last September,[3] "it should not be necessary to wait for absolute proof from statistics before tackling all the problems of atmospheric pollution in a comprehensive way."

As the Committee on Air Pollution (the Beaver Committee) [4] made clear, there are two main components in smog—namely, dirt and grit, and sulphur products. The committee concluded that if this (or indeed any other) Government would declare for a clean-air policy the dirt and grit could be abolished fairly quickly. Thus it could be reduced by making much more smokeless fuel available for domestic grates; by popularising appliances for the economical burning of these fuels; by introducing modern plant, better methods of stoking, and a wider use of gas and electricity in industry; by better control of smoke from railways; by establishing more smokeless zones and also smoke-control areas (in which the use of bituminous coal for domestic purposes would be restricted); and by more effective legislation (to be enforced by local authorities) against the emission of black smoke. Such a programme might very well give us a sparkling—though not necessarily a safe—atmosphere in a very few years.

But the sulphur products—the invisible and far more dangerous component of smoke—present a truly difficult problem. The total quantity of sulphur dioxide discharged into our air is over 5 million tons a year, and at present we know of no really satisfactory way of preventing its discharge. One straightforward preventive measure would be the better cleaning of coal at the pit-heads so as to remove as much sulphur as possible, and the National Coal Board is pressing on with a programme to achieve this; but only a small part of the sulphur can be removed in this way by existing methods. It might be possible to add some material to coal which would cause the sulphur to be retained in the ashes; attempts to do this have not so far been successful, but further research might well give the answer. Fuel oil, used in industry and to drive some vehicles, also releases sulphur into the air; but, though it is technically feasible to remove most of the sulphur from fuel oil, this is a costly process. In large power-stations sulphur dioxide can be washed from the gases, and such processes are used in the Battersea and Bankside stations, though not elsewhere. The cost of installing new plant in other stations, the Beaver Committee estimated, would add 8*s.* to the cost of converting each ton of coal into power, or 0·06*d.* per unit of electricity generated—an addition which could scarcely be dismissed as inconceivable. At a public discussion ot the Beaver report, held by the Institute of Fuel on Jan. 21, this figure was challenged by Mr. J. D. Peattie, deputy chief engineer of the British Electricity Authority: he thought the cost of introducing gas-washing into power-stations would be at least £140 million and might be £250 million—which, he said, would increase the cost of electricity by 12%. Even this expenditure, however, might well be justified. The committee's estimate of the damage done by air pollution in a single year was £250 million.

His was the only critical note in a meeting warmly pro-Beaver. Mr. G. E. Foxwell, D.SC., immediate past-president of the Institute, and a member of the Beaver Committee, suggested that our present difficulty lies in the fact that the National Coal Board and the gas industry are hesitating to expand smokeless-fuel production because the Government have not accepted a clean-air policy; while the Government are hesitating to adopt this policy because they are not sure whether, if they did, the nationalised undertakings would be able to meet the additional demand for these fuels. In an attempt to break this deadlock, Mr. Gerald Nabarro has introduced into Parliament his Private Member's Bill—the Clean Air Bill. This will come up for its second reading on Feb. 4, and it embodies all except the fiscal recommendations of the Beaver report. It is a measure which, Dr. Foxwell hinted, has been compared by some to a spur to goad the Government to action, and by others to a pistol likely to go off at half-cock. In Mr. Nabarro's own view, he said, the Government have no intention of introducing legislation during this session, and thus any measures to deal with air pollution would be delayed till after next November, and probably fill the next Parliament. We should all like to see something done before that.

One further reason for spending money on research is that the sulphur which is at present such a liability could become an important asset. Even the methods of gas-

2. Theron, P. H., Wilson, W. C. *Lancet*, 1949, i, 172.
3. The Coal Crises and Society. Published by the National Smoke Abatement Society, 30, Grosvenor Place, S.W.1. Pp. 10.
4. London: H.M. Stationery Office. 1954. See also *Lancet*, 1954, ii, 1163.

washing used at Battersea and Bankside result in the discharge of sulphur effluents into the Thames—an undesirable practice in itself, and a shocking waste of a commodity which is always valuable and sometimes scarce. At Fulham power-station, before the war, a method was used which retained the sulphur as impure calcium sulphate; but this method was given up during the war and has never been started again. A new and cheaper process, on trial by the British Electricity Authority, gives ammonium sulphate as a residue; but the years are rolling by without any report appearing on this method, and the Beaver Committee remarked that they were "not impressed by the speed with which these matters have been pursued." Perhaps some incentive to speed might be offered.

One thing is abundantly clear: we must agree as a people to spend more money on this problem. To doctors the need to spend whatever is necessary seems urgent; and even from the strictly economic standpoint there are strong arguments against the present conversion of so much precious coal into useless smoke. Money spent on discovering ways of preventing so much waste and damage may be expected to repay itself many times over.

CROWDS AND POLIOMYELITIS

IF a group of epidemiologists were asked to predict the effect of large crowds on a poliomyelitis epidemic their replies might not be unanimous. They and others will therefore be interested in a careful account of what happened in a situation of this kind.[1] Western Australia, one of the most sparsely populated areas of the Commonwealth, experienced its biggest recorded poliomyelitis epidemic last year. The only epidemic of comparable size in this State had been in 1948, and on that occasion the gathering of crowds was thought to have had an adverse effect on notification-rates.

Last year's epidemic coincided with the arrival in Western Australia of the Queen and the Duke of Edinburgh, and huge crowds were expected throughout the visit. The public-health authorites felt justifiable alarm at the possibility that the crowds would allow the epidemic to spread and enlarge. Precautionary measures, in an attempt to reduce the spread of infection in crowds, were aimed largely at children. A special review of children, which would have involved mixing of children from many different areas, was cancelled. Instead, children were assembled in their own school groups at special points on the highway of the Royal route. Children were not required to stand about for longer than an hour, and each child was given a "health bag" containing food, a drink, a cake of soap, a small towel, and his or her own drinking-vessel. School groups were kept carefully apart from each other, but no special measures were taken to control the size of adult groups. General control measures were already in operation. Clinical cases of poliomyelitis were isolated for two weeks, and close contacts under the age of 15 were kept at home for the same period. There was a publicity campaign on the importance of hand cleanliness, and another on "anti-fly" measures. Dental operations, operations on the nose and throat, and immunising injections were suspended, and swimming-classes were cancelled.

The Royal couple arrived in Western Australia just after the peak of the epidemic, and crowds of sizes unprecedented in the history of the State gathered every day of the following week. These crowds were extremely dense; and yet the steep downward trend of the notification-rate was quite unaffected. This can hardly have been due to exhaustion of susceptible individuals, for six months after the epidemic peak there were still over 20 notified cases a month—a figure regarded as within the epidemic level for Western Australia.

1. Snow, D. J. R. *Med. J. Aust.* 1955, i, 2.

We are left with the possibility that crowds are not an important factor in the spread of poliomyelitis, or that the precautions prevented increased spread. Nature is an untidy experimentalist, and because of the absence of controls in most of her trials it is almost impossible to assess the importance of different factors. Nevertheless, either conclusion would point to transmission of infection by fæcal contamination as more important in this epidemic than spread by pharyngeal droplets. This is in line with the seasonal incidence of the disease, and with the higher concentration and longer sojourn of the virus in the intestine than in the pharynx. The experience of the Western Australians has valuable lessons for epidemiologists everywhere.

NATIONAL FORMULARY

THE 1955 edition of the *National Formulary* will be welcomed by both general practitioners and pharmacists, for whom it is principally designed. This volume retains the general structure of its predecessors; and an admirable dogmatic survey of current pharmacological teaching will be found, as before, in its opening pages. The formulæ themselves represent a wide range of prescribing traditions. The Joint Formulary Committee announces that its policy has been to retain a prescription, even if its justification on pharmacological grounds is disputed, provided it is still in common use. This spirit of leadership from behind explains the retention of many "favourite prescriptions," but not the rejection of the pill of aloes, the emulsion of liquid paraffin with agar, or the compound thymol mouthwash. But room has to be found for many new preparations and something must go; one can imagine that each of the 62 deletions cost the committee a pang. The capsule of quinalbarbitone and the tablet of isoniazid are welcome newcomers, but it is strange to find among these mist. gent. alk. c. phenobarb. and tab. quinin. bisulph,

In the 1952 *Formulary* each preparation had a Latin and English title in that order, whereas the section headings had an English and a Latin title in that order. Consequently the pulveres were sandwiched between cataplasma and the liquores. This arrangement, according to the new preface, proved inconvenient to the users of the *Formulary*. But now, instead of adopting the obvious solution (as in the *B.P.* and *B.P.C.*) of finally displacing all Latin titles to a position of inferiority, and calling all things by their plain proper English names, the committee has turned the clock backwards. Poultices are now followed by collodions, and these in turn by nasal washes. The main titles of preparations are given in abbreviated Latin, displeasing to the eyes of those who read Latin and meaningless to those who do not. The *Formulary* contains a pharmacological classification; but in its present form, compressed into 15 consecutive pages, this is little more than an additional index. The classification would be much more valuable if its sections were dispersed throughout the *Formulary* proper, which would then be a suitable companion volume to the modern textbook of clinical pharmacology.

Meanwhile, these criticisms should not obscure the general excellence of the book, which is a sturdy monument to the British tradition of compromise. If publication of it were to cease, its sternest critics would be among the first to protest. The *Formulary* is to be distributed to doctors next month. Distribution also to clinical students might greatly encourage rational prescribing, with a corresponding decrease in the national drug bill.

Dr. C. H. HAMPSHIRE, secretary to the British Pharmacopœia Commission from 1929 to 1950, died in London on Jan. 25 at the age of 69.

1. National Formulary, 1955. London: British Medical Association and Pharmaceutical Press. 1955. Pp. 210. 5s.

Public Health

HOUSING

FROM THE FIRST WORLD WAR TO THE PRESENT DAY *

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THE story of housing is one of the most dramatic and poignant in our social history. Two of our most cherished beliefs—the ideals of health and of property—have been brought into conflict over the issue of the sort of home in which we should live. It has been a struggle waged, as it were, between giants, and fought on shifting sands. As property rights slowly conceded point by point the right to State intervention, the demands made on the score of health increased in step; as the measures to combat slums gained in cogency, the increase in population and the rise in households continually tended to neutralise their success. In the background of the contest lay the bogy of overcrowding, worse perhaps than the slum itself, which was made greater by slum-clearance.

Looking back at the seventy years preceding the first world war, one may ask why so much legislation over so long a time had so little effect. The trouble lay mainly in the failure to meet four fundamental difficulties: (1) the inflated cost of building land; (2) the need to compensate owners of demolished slum property; (3) high rents of new houses; and (4) the difficulties of slum-clearance in circumstances where populations and households were ever expanding. When great overcrowding and widespread slum conditions are present together, the administrator who presses for the demolition of the slum, unless he also provides the equivalent in new housing, ipso facto, increases the overcrowding. From the frying-pan into the fire, some would say. Nor was the obvious truism always appreciated that in the slums live the poor. The costs of new housing are so high that rents, if unsubsidised, are beyond the pocket of the slum-dwellers. Legislation that takes no account of these fundamentals must always be a dead letter. Such increases in new housing as there were took place chiefly by trends and influences independent of Parliament. Such houses were not for the unskilled and semi-skilled workers, whose lot remained largely unaltered. In any event, the increase in the number of households was sufficient to occupy all the new dwellings built under private enterprise.

To all this was added the difficulties of advancing standards. The number of dwellings needed rises as the number who can be supposed to live properly in a home goes down. The difficulty of providing them becomes greater as the standards advance.

The Inter-war Period

The first world war left the state of housing graver than before. By 1921 we had reached 8,739,197 households, and 3½ million persons were living, in England and Wales, at more than 2 per room. In Scotland the figure for overcrowding was 43·3%, with 21% at more than 3 per room. But as we enter the period between the wars we find increasing evidence of a new outlook. The Housing Act, 1919, required local authorities to prepare schemes for providing in their areas enough homes for the working classes and at first the Government gave unlimited aid, by paying excess cost over a 1*d.* rate. But the enemy of increasing cost soon gained the upper hand: the 1923 Act limited Government aid to a contribution of £6 per house per year for twenty years; that of 1924 (the Housing Financial Provision Act) to a subsidy, with restriction on sale, of £9 for forty years in urban areas and £12 10*s.* in agricultural areas. Between 1918 and 1931 over 1 million houses were built, three-quarters of them under government-assisted schemes, and between the wars the grand total was over 4 million homes. The volume of house building after 1930 rose to an average of over a third of a million houses a year.

The Housing Act of 1925 left much to be desired, but it stimulated the first real efforts at slum-clearance, and those of 1930, 1935, and 1936 made a valiant attempt to deal with the remaining difficulties. The 1930 Act removed the liability to compensate owners of unfit houses when these were made the subject of a demolition order. It required houses to be provided in advance for clearance areas, thus removing another great deterrent to action; and it introduced a new procedure of the "improvement area."

In 1935 overcrowding was at last officially defined. This was on a low rating roughly similar to the 2 per-room scale used by the Registrar-General for some forty to fifty years in his Decennial Census. Authorities were required to survey their areas and report on the extent of official overcrowding.

The 1936 Act brought the legislation to its present state. The responsibility rests with the housing authorities, as it has done since the beginning, to inspect their districts; the authorities have the power, subject to appeal to a county court, to order unfit houses, that can be made fit at reasonable expense, to be repaired according to a schedule of work. Houses that cannot be made fit at reasonable expense may be the subject of an order for demolition or closure. Any areas consisting of at least two houses may be declared a clearance area, and a clearance order can be submitted to the Minister of Health for confirmation; there is provision for redevelopment areas, which has extended the idea of the improvement area to include all property in a given area; and there is authority for compulsory purchase orders, together with the power for making by-laws. All this applies to houses that are occupied, or are of the type suitable for occupation by persons of the working classes.

It was unfortunate that the Housing Act of 1936 allowed a variable standard of fitness to continue, being that of the "general standard of housing accommodation for the working classes of the area."

The rate of clearance accelerated. By 1939 a quarter of a million houses had been demolished and the loss had all been made good by replacement houses. Yet much of the benefit of the vast slum-clearance was lost through the overcrowding which remained. With the second world war this intense activity came to an end and all further attempts to destroy slum property were left to the enemy.

After the Second World War

The post-war period has been one of intense building activity, unassociated this time with any attempts to remove the slums, and accompanied by a new approach to town and country planning. Since the war a further 2 million houses have been built, five-eighths of these by local authorities, and 124,555 in temporary materials.[1] There can be little doubt that almost for the first time we have gained a lead in overcoming overcrowding. This lead, however, is not great, for the influences that increase the need for separate dwellings have been exceptional. Within the past quarter of a century—between 1931, when there were 10,154,000 families, and 1954, when there were 12,152,000—there has been an increase of 2 million.

* Part of a lecture contributed to a series on the Changing Social Environment 1850–1950, delivered at the University of Cambridge on Oct. 25, 1954.

1. This was the figure on June 23, 1954.

requiring separate accommodation. This includes the widowed and single adults, who nowadays more often want to live alone.

The idea of planning the use of land was first introduced in 1909. The 1919 Act required all boroughs and urban districts with over 20,000 people to produce a scheme of development. Again and again Parliament passed measures (in 1923, 1925, 1929, 1932, and 1935) designed to strengthen the control of land, but with little real effect. Only 5% of England was by this means made subject to a planning scheme. With the second world war, however, real appreciation of what was needed for control began to grow up. In 1943 a separate Ministry of Town and Country Planning was created—marking the Government's acceptance of the belief that, if the planned use of land was ever to become a reality, it could only be as a result of action on a national scale. The Barlow, Scott, Uthwatt, Reith, and Hobhouse reports formed the basis of a new machinery. The New Towns Act, 1946, was followed by the Town and Country Planning Act, 1947. Twelve new towns have been started, and the planning authorities—now limited to the county councils and county-borough councils, 145 in number—have been preparing schemes for their areas.

The Present Position

Today we hear more complaints than ever, but they arise out of an awareness of what good living demands of a house. It is only in the past fifty years that internal plumbing, sanitary convenience, and bathrooms have come to be considered a general need. The Housing Act of 1923 was the first to require a bath in a new dwelling and that of 1924 a bathroom. Our present standards owe much to the work of the Central Housing Advisory Committee appointed under section 135 of the Housing Act of 1936, and to the *Housing Manuals* of 1944 and 1949 which this committee produced. To the 1944 manual we owe the 16-point recipe for the making of a healthy house. The Housing Act of 1949 has seen the end of varying standards of fitness, "according to the state of the working class property in the area," and has extended the jurisdiction of the housing authority virtually to all property. We have also come at last to appreciate that overcrowding is more damaging to health, comfort, and enjoyment than is the insanitary state of the dwelling itself.

Yet housing today falls far short of the ideal.

Overcrowding

Overcrowding is still a serious consideration. According to the 1951 census, 11·6% live at a density of between 1 and 1½ per room; 4·9% between 1½ and 2 per room; 1·6% between 2 and 3 per room; and 0·4% over 3 per room. (For the purposes of the census, rooms counted are the usual living-rooms, including bedrooms and kitchen but excluding sculleries, landings, lobbies, closets, and bathrooms.) Improvement in official overcrowding figures between the 1931 and 1951 censuses had been unexpectedly high. The average of persons per room has fallen from 0·83 to 0·73 in England and Wales and from 1·27 to 1·04 in Scotland. The percentage living at more than 2 per room has fallen from 6·94 in 1931 to 2·16 in 1951. In the 1931 census there was only one London borough with less than 5% of the households living at over 2 per room. There are many areas (e.g., in and around Newcastle and Glasgow) where overcrowding is still serious. The average density per room in Glasgow is 1·27 and a recent survey of 718 families rehoused for twenty years showed an average density of 2·03 per room.[2]

But overcrowding is more serious than these figures suggest. The official figure for overcrowding, which is roughly 2 per room, is too lenient. The figure of the Royal Commission on Population is 1 per room. At this rate there were just under 3 million households, holding over 13½ million people, overcrowded in 1951. Further to this, overcrowding affects the family and particularly the large family. Overcrowding increases steadily with family size; 44% of families with 5 persons has less than one room per person; the figure for 6 in a family is 72%; and for 8 in the family, 93%: according to a special survey quoted in the report of the Royal Commission on Population. This rise of overcrowding-rate with family size takes place equally within the same income group. We have also to remember that many more households, although not technically overcrowded, live an overcrowded life. The chief cause of this is lack of warmth, which may cause 3 or more to crowd into a bed or 5 more more to a small room.

The effect of overcrowding in the absence of other adverse factors are in 1954 not easy to assess. Housing is one of a number of factors which play their part in the spread of infections of the respiratory type. When other important adverse influences are absent, overcrowding on its own may be relatively unimportant as the cause of illness. But when other things are not equal, overcrowding in an unhygienic house may be the determining factor. It is thus with tuberculosis: once an open case occurs in a house, secondary infection of children becomes more common. It is thus also with infant mortality and infections of childhood. But much the most important effect of overcrowding is its destructive influence on an ordered family life. No true home life can be lived in an overcrowded house.

House-sharing

Overcrowding is objectionable and can lead to physical, mental, and moral ill health. Sharing of dwellings is no less an evil. It is itself a cause of overcrowding and a potent source of mental strain. Over 2 million households in Great Britain (1951 1% census) are shared; ½ million of these are also overcrowded (that is living at more than 1 per room). Sharing bears heavily upon those with young growing families and particularly upon the newly wed. In a recent Aberdeen study of women who booked a bed for a hospital delivery, over half of the total, and about three-quarters of the primagravidæ, shared a home. The most inadequate and often insanitary accommodation can be preferable to sharing. Insecurity, worry, and unhappiness are the results of the conflicts which arise.

The Poor Home

The outlay required to get a roof over your head varies with the choice and area and structure. Good housing in a healthy area will generally cost more than a slum dwelling to rent. The significance to the family budget of this simple fact is considerable. Children cause poverty, and poverty is the chief reason for the poor dwelling. Large families suffer particularly. As the family grows and the weekly pay-packet has to be stretched to meet increasing liabilities, the parents, before sacrificing food, seek relief in cheap clothing and less expensive housing. The large family naturally gravitates to the cheapest sort of house. An alternative is to increase the family income by taking in lodgers or sharing. The growth of the family is probably one of the reasons why, in the Aberdeen survey, council houses occupied by such families were more commonly shared (78% as compared with 38% of private dwellings). Council houses were also more often overcrowded (28% as compared with 14%). Indeed any influence that takes away the element of elasticity in the budget may do harm. In the M'Gonigle survey at Stockton-on-Tees the suggestion first appeared that re-housing could be harmful to health if the cost of housing was too great for the budget. The flexibility of cheaper housing was

2. Ferguson, T., Pettigrew, M. G. *Glasg. med. J.* 1954, **35**, 183.

removed. Soutar, Wilkins, and Sargant Florence [3] said of the Birmingham survey:

"While providing a much better environment the housing estate undermines the family's resources in other respects. The family moving from the slums to a new housing estate on the edge of the city has greater costs to meet out of the same income. Rent is usually higher; there are increased costs of transport both for business and pleasure, and often the necessities of illness; there is usually a need for more furniture, necessitating hire purchase agreements; wear and tear on clothing, especially on footwear, is generally greater; children's appetites are increased; food prices are higher. To accentuate these higher costs there is sometimes a reduction of income due to women losing the opportunity for part-time work in the city. As an independent social reform, rehousing has its limitations."

Lack of Equipment

Despite the big housing drive, many of our present houses are obsolete. Out of our total of about 11 million houses, nearly half were built before 1914 and 3 million before 1870. In the matter of housing we are living in the past. The 1951 census recorded more than 1 in 5 households (22·7%) without exclusive use of a water closet and twice this number (45%) without exclusive use of a fixed bath. More than 1 in 10 (13·8%) are without exclusive use of both sink and stove. For the 57,700 households with more than 3 persons living per room the present situation is grossly inadequate; 52% of these are without exclusive use of a piped water-supply, 41% lack exclusive use of a cooking stove, 80% of a kitchen sink, 84% of a water-closet, and 92% of a fixed bath. 84% of these overcrowded homes lack exclusive use of both stove and sink. There are 2 million households (2,078,800) sharing dwellings, irrespective of the number of rooms occupied, that present a similar picture, the percentages of inadequacy (64, 39, 49, 69, 86, 50) being very similar to the houses living at 3 per room. In half of these shared dwellings, where the household lives in one or two rooms, the percentages of inadequacy (78, 57, 69, 86, 94, 70) are almost terrifying in their completeness. The term "living" in such conditions is an exaggeration. Even to consider the usual inadequacies of bedroom space, furnishing, the absence of a pantry, a broom-cupboard, or proper space, heating, and lighting, with room for children to study, and the many other essentials of decent living, seems fantastic in the light of such conditions.

The House in its Social Setting

Many of the social needs of the family should be satisfied within an area that can be conveniently reached. The satisfaction of many of these will be found in the town. The town, therefore, should be a pleasant place in which to live and a joy to visit: it should shelter the good life. That it ceased to be so during the hundred years between 1750 and 1850 is one of the heavy prices we have had to pay for industrialisation. "The idea of the town," the Hammonds said, "as a focus for civilisation, a centre where the emancipating and enlightening influences of the time can act rapidly and with effect, the school of social arts, the nursery of social enterprise, the witness to beauty and order and freedom that men can bring into their lives, had vanished from all minds." The town was no longer "a living personality, expressing and cherishing the instincts, tastes, beliefs and corporate pride of the citizens widely and richly pictured." [4]

The Way Ahead

Bad as in many respects housing is today, our towns are immeasurably better than the civilian barracks and camps of 1850. Nevertheless, when one thinks of other achievements of our vast industrial machine, the balance-sheet of a hundred years of housing is not encouraging.

Perhaps the greatest hope of improvement lies in a static population. Britain, having battled its way for two centuries along a dynamic demographic curve, is now entering upon a period of stationary population. For some time to come—possibly for fifty years—this island will return each year to the Registrar-Generals' departments a population figure of about 50 million. During the last twenty years or more, independently of rising population, the number of separate households has much increased, because of smaller families and the greater numbers of single persons living alone. This source of increase, too, is likely to disappear. With the old enemy halted at last, we can overcome him completely. The present-day drive for new housing, if continued, should be enough to overcome the present shortage, of which shared dwellings is the most obvious sign, in a relatively short period of time, and it can then be applied to the elimination of the slum itself. There is of course much to replace, but in a static population and without the complication of increasing households the task is well within our capacity. We will be wise to remember the saying of Lord Simon of Wythenshawe in the 1930s that the worst living conditions are not to be found in slums but in the overcrowded larger houses let in lodgings. We shall also be wise to continue to let new building take priority over slum-clearance.

Nevertheless, the time has come to look beyond our immediate needs. Quantity has necessarily taken pride of place in our thoughts: we have needed so very long the roof over our head. But now that the ideal of one family, one dwelling, is at least within our grasp, we should turn our attention, without delay, to quality. We should seek to provide for the good life by enriching the interior of the home and by adorning its social setting.

The Home

It is not for me to talk about architectural details, and I will only speak of the home itself. As Mackintosh says, "In dealing with ordinary families, planning has too often been a dull, routine matter of figures, relating to family size, and houses and flats are accordingly built with one, two, three, or more bedrooms in answer to certain mechanical calculations." [5] To think in terms of persons per room, as now we are inclined to do, is often to ignore the meaning of family life. Our aim must be to provide what is needful for a home, including such diverse objects as hobbies for father, and a room for study and quiet for grammar-school children. We should aim at good insulation and proper space heating, which can now make it possible to use every room. Except for older folk and single workers, every home should have three bedrooms. A newly married couple, with a family to start and to carry through, and later their children's friends to put up, can look forward to full occupation of a three-bedroom house for a continuous spell of thirty years. The home must cease to be the woman's workhouse. Good planning and the use of technical aids, which the New World has sponsored, can release her from drudgery. The framework of essential services from space heating to clothes-washers, should be mass-produced, freed from the exasperating inadequacies associated with lack of uniformity, and made available to all at home. The house must be more than a reluctant and passive partner in family life. It should be an active, willing, and friendly participant.

The Town

One of the most important needs of a good social setting is that there shall be an easy access to a cultural centre.

3. Nutrition and Size of Family: Report on a New Housing Estate, 1939. Prepared for the Birmingham Social Survey Committee by M. S. Soutar, E. H. Wilkins, and P. Sargent Florence. London, 1942.
4. Hammond, J. L., Hammond, B., The Town Labourer (1760–1832). London, 1949.
5. Mackintosh, J. M. Housing and Family Life. London, 1952.

We need good towns. If this was true in the 17th century how much greater the need today, when we have become a nation of town-dwellers. Good towns were relatively easy to produce when this country had a population of maybe 8 million people and a strong rural economy, but the proper balance of town and country is immensely more difficult with 50 million and a strong urban industrial economy. Yet it is not impossible. Sprawl is the great enemy and must now be strongly resisted.

The goal we should place before us is to recreate our towns. For this some measure of compactness is needed; redevelopment and in-filling should take preference over further extension of our urban areas.

"While the creation of a new community if often the simplest and most attractive task for the skilled technician," as the *Housing Manual* 1949 says, "the need for doing all that is possible to remedy the deficiencies of existing development should not be overlooked; this work is less spectacular but its effect upon the general wellbeing of the community as a whole, as well as the occupants of the new houses which are built, may be even more important and far reaching."

Our towns have suffered two centuries of agony. It is time now to treat their wounds. In advising local authorities on what principles they should plan, the *Housing Manual* of 1949 says very wisely: "In most large towns there are substantial areas surrounding or immediately adjoining the business or central area that are in need of redevelopment." It advocates that "individual re-development schemes must be related to the redevelopment of a town as a whole, and care must be taken that all first stage redevelopment is properly related to a complete and comprehensive scheme." This should "offer the opportunity for restoring the proper balance of open space and for providing reasonably accessible playgrounds parks and gardens." We must not be afraid to go upwards when this is part of a well-ordered plan.

A good town will have scope for a wide variety of types and heights of buildings. We have given favour to the cottage, but in point of fact there are many advantages structurally and æsthetically in the terrace. The detached two-storey cottage of standard design, as Mackintosh has said, is usually an unpleasant-looking little box inclined to be cold in winter. The terrace is warm and without making serious inroads on privacy permits of greater variety in layout of the estate as a whole, and in the treatment of separate blocks. How much of 17th-century English beauty of architecture we owe to the terrace.

For the improvement of our social setting our greatest hope must now lie in the Town and Country Planning Act of 1947. The Industrial Revolution, achieved at a cost of reckless misuse of land, has left us a legacy of outworn towns, sprawling suburbs and disfigured countryside. Time will be needed in its remedy. To this we should now bend all our efforts.

"... The curse of religions is their tendency to make people believe that certain systems of doctrine and certain ceremonies contain in themselves the whole secret of the universe, thus reducing the vast and wonderful to the small and childish. Unfortunately, when human nature functions without religion it makes exactly the same mistake. The blight of modern psychology is its tendency to think that when names are fixed to various aspects of human behaviour, a great advance towards wiser conduct is thereby made. Similarly, the arrogance of priesthood is to-day found all too frequently among scientists, and notably psychiatrists. . . The nature of the universe and of man is in hard fact infinitely complex and ultimately mysterious . . . it makes ridiculous those who pretend to know all the answers, whether they do so in the name of God or of science."—*Observer* editorial, Jan. 16, p. 6.

HEALTH EDUCATION

THE education of the public in matters of health is no new practice; but, whereas formerly it was haphazard and desultory, it has now become methodical and systematic. Yet, even in this country, there is evidence that it should be intensified.

David [1] showed that in Greater London people were surprisingly ignorant about tuberculosis—although there has been more propaganda about this disease than any other. Half those questioned thought that tuberculosis was hereditary, and a third either believed it to be non-infectious or did not know whether it was or was not. Gore and Hartston [2] recorded very similar findings. Likewise a survey among women has revealed prejudice and ignorance about the causes and the treatment of cancer [3] Public ignorance—and apathy—are suggested by the tardy response to clean-food campaigns, the high home-accident rate, the continued vast expenditure on "patent" medicines, and the low rate of immunisation against diphtheria. (It is estimated that in the London area in 1953, only 51% of children under 5 years of age had been immunised against diphtheria at any time [4]; whereas the aim is immunisation of 75% before the age of 1 year.)

Walker [5] speaks of the prevalent ignorance about medical science but does not doubt that today people are more responsive to propaganda than formerly. Partly this improved responsiveness may be due to the experience of the many who were in the Services in the late war, when a vigorous health-education campaign contributed substantially to the ultimate success of our arms. Much of the most telling propaganda had its birth in the units themselves, where it was fostered by the commanding officer and his officers, with the medical officer as counsellor. Some may recall, too, the posters and road signs on the highways of North Africa and Southern Europe: "Blood, toil, sweat, and tears: why add Malaria?" "Mepacrine: a milestone to victory" and others less polite. The obvious loss of man-power through malaria, dysentery, typhus, and other diseases was one of the most effective of all health-propaganda weapons. And contrariwise, in civilian life today, one reason why rates of immunisation against diphtheria and smallpox are dangerously low is that so few parents of young children are old enough to remember the time (not so long ago) when diphtheria was a serious menace, while still fewer know from experience what smallpox can mean. But some of the Army's other educational weapons could certainly be more widely adapted to civilian conditions—for instance, with the managing director cast as the commanding officer and the works doctor as his counsellor.

A W.H.O. expert committee, which has been examining this problem,[6] recognises that health-education programmes can conform to no standard pattern: the programme must be specifically designed for the locality. As to methods, the committee rightly criticises the long lecture, which seldom secures continuous attention, and whose effects fade rapidly. The lecture is slowly being ousted by the discussion group and panel discussion. Films, too, have an important place; but the committee points out that these may produce a passive mental state, and in any case they should portray local conditions. Pamphlets and posters are increasingly used; but they are quite costly and the committee sensibly suggests that, if used at all, they should not be

1. David, S. T. *Tubercle*, 1952, **33**, 78.
2. Gore, A. T., Hartston, W. *Mon. Bull. Minist. Hlth Lab. Serv.* 1953, **12**, 131.
3. Paterson, R., Aitken-Swan, J. *Lancet*, 1954, ii, 857.
4. Report of London County Medical Officer of Health, 1953. See *Lancet*, Jan. 8, 1955, p. 93.
5. Walker, J. V. *Med. Offr*, 1954, **92**, 321.
6. Expert Committee on Health Education of the Public First Report. *Tech. Rep. Wld Hlth Org.* 1954, no. 89.

put up simply as decorations and should be changed often. Similarly, health exhibitions may not justify the financial outlay unless they are followed at once by further local propaganda.

The report makes it clear that the aim of health education should be to encourage personal responsibility. In this country the Services continue to play an important part by training National Servicemen in hygiene and health. But we should now be concentrating on younger people, in pre-school and school days.

Vital Statistics for 1954

The Registrar-General's provisional vital statistics for England and Wales for 1954 [1] show that the birth-rate was 15·2 per 1000 population, compared with 15·5 in 1953 and 15·3 in 1952. The infant-mortality rate was 25·5 per 1000 related live births, the lowest annual rate ever recorded in this country; this rate compares with 26·8 in 1953, 27·6 in 1952, 29·7 in 1951, and 52·8 in 1938. The death-rate was 11·3 per 1000 population, compared with 11·4 in 1953 and 11·3 in 1952. Registered births exceeded registered deaths by 171,334.

1. Registrar-General's Weekly Return no. 2, 1955. H.M. Stationery Office. Pp. 20. 1s.

Influenza

In the 160 great towns of England and Wales, there were 134 deaths attributed to influenza in the week ended Jan. 15. In the three preceding weeks deaths had increased steadily, the figures being 56, 82, and 102. Since the week ended Oct. 2 there have been 648 deaths from influenza in the 160 great towns; the corresponding figures for the three previous winters were 260 (1951–52), 426 (1952–53), and 261 (1953–54). Laboratory investigations continue to confirm that many outbreaks are due to influenza B, though isolated cases of influenza A have been identified in Wales and the Midlands.

Smallpox in France

A message dated Jan. 14 from the French ministry of public health and population gives the number of cases of smallpox in the Vannes area as 44, of whom 5 have died (later press reports put the number of deaths at 6). Contacts have been placed under strict surveillance, and mass vaccination has been carried out in the region. The latest cases appear to have been direct contacts of previous cases.

The Widdicombe File

XXII. ὁ βίος βραχύς. . . .

MY DEAR BILL,

Mrs. Wayneflete has just died. Admittedly 83 is a good age and everyone will say she had a good innings, but I still feel sad. What a pity she didn't call you earlier instead of letting her daughter, who, as a one-time nurse, surely should have known better, go on applying hot fomentations to an obvious epithelioma of the vulva. When my house-surgeon finally got the history, we found that the original small swelling was first noticed *fifteen months ago*; and although it was at first thought to be simply a boil—and it obviously became infected very early—the fact that it grew bigger and bigger should have convinced her daughter that it was a most unusual boil! I believe the old lady herself resisted the suggestion that anyone should examine her; so the daughter, I suppose, is not wholly to blame; but they both became alarmed by the first hæmorrhage. You saw the specimen—I keep a coloured slide especially to show the students as a "horrible example."

As you know, I did a very wide excision of which even Stanley Way would have approved; but she had a local and pelvic recurrence rather less than a year later and from that moment went down hill very quickly indeed. Still, she did have about a year of reasonable comfort and I am quite sure the operation was justified.

I saw a very similar case in which the mother-in-law of a surgeon had a melanotic sarcoma of the labium major which she had *known* about for eight months before seeking advice. Only a local excision to relieve the bleeding was possible; but in spite of the limited surgery she survived, spent a very happy six months in Devon—"down tu Budleigh Salterton"—and then mercifully succumbed with dramatic suddenness to secondaries in the lungs.

I expect you see tragedies just like this in your own practice—I only see the gynæcological ones, which are bad enough—and it does seem, on the face of it, that the public do need some education and reassurance about cancer.

And yet it is astonishing how hard it is to convince people—men, women, doctors, public authorities, even Government departments—of the necessity for *some kind* of health education. Stocks, in his "Studies in Medicine and Population Subjects" of 1950 produced some very alarming statistics. In the first place, of the 86,000 people of both sexes who die each year of cancer, 2 in 3 are under 50 years of age and 1 in 5 is under 45—it's by no means a disease of the aged—and of these, carcinoma of the breast accounts for about 1 in 5 and of the uterus and adnexa for about 1 in 10. The tragedy among these women is that Stocks found that the average delay between the onset of symptoms and the commencement of treatment was six months for breast and cervix and ten months for body of the uterus, which is dismal enough reading.

Malcolm Donaldson analysed these statistics even further and showed that for carcinoma mammæ a "delay period" of *under* six months meant that 2 out of 3 cases were stage I or II, and therefore more amenable to treatment, and in any case gave over 40% five-year cure-rate.

In our own unit, we see about 50 cases of carcinoma of the cervix every year. Of these, 6% are stage I and 36% are stage II. In not one of five major centres in England was the percentage of stage-I carcinoma of the cervix less than 11. The figures from the eighth annual report on the Results of Radiotherapy in Carcinoma of the uterine Cervix (Stockholm 1954) show that, of 73,612 cases analysed, 19% were stage I and 40% stage II. The five-year cure-rate of 26,555 cases treated in the latest five years was 62% for stage I and 43% for stage II; and it was only 8·5% for cases in stage IV, who represented 1 in 13 of all cases seen. In 1955 it is still true to say that, of all the cases of carcinoma of the cervix we see, only 1 in 3 will survive for five years. In our own series it's 1 in 4 at best.

It is quite obvious from this evidence that the earlier the women come for treatment the better are our chances of helping them; so the delay must somehow be abolished. The Central Council for Health Education has two clear objectives: (1) to reduce this delay between first symptoms and attending a doctor, and (2) to reduce the delay between reporting the symptoms to a doctor and having effective treatment. Which seems reasonable enough. Both the women and the doctors need gingering up, I believe; for in my own experience not every "post-menopausal bleeding" is sent to hospital by the doctors at once.

Why should there be these delays? Some say that the mental state of the woman prevents her seeking early advice. Either she is ignorant of the significance of the symptoms, or she is so afraid of cancer that she is scared to be told it *is* cancer in her own case. I always remind the students that all women are liars and all women are fools, which gets me into much trouble, although the force of the argument is never more fully shown than in these very cases of cancer in women. It does seem that women must be educated somehow to recognise the dangers they run in neglecting early and probably

insignificant symptoms—the question is how. I know you will agree that wholesale propaganda would be worse than useless, and only increase the dread of cancer that every woman has; but it is equally futile, I think, to say that any attempts at education would *introduce* fear of cancer; I believe the dread is there already. You read the very valuable report, full of interest and significance, by Paterson and Aitken-Swan in *The Lancet* of Oct. 23 on Public Opinion on Cancer. They wanted to find out just why women put off seeking advice for symptoms they *suspect* to be due to cancer. The paper can't be summarised, it must be read in full; but it did show the appalling ignorance among women as to the nature and purpose of treatment and the obvious need for education, and I must quote in full two significant passages:

"Cancer of the cervix is predominantly a disease of the lower social groups; yet it is in this class that ignorance of the symptoms is most profound."

"The great majority of women realise the possible significance of a painless lump in the breast, but there is no sense of urgency *when cancer is so widely believed to be incurable.*"

The italics are mine. Half of the patients with what they suspected as cancer of the breast delayed seeking advice for three months or more, and 1 in 5 for *over a year.*

There can be no doubt that your way of discussing this problem with your patients is the best; but (let us be brutally frank) not every general practitioner is as conscientious. Not long ago a case was quoted in the medical press of a man of 46 who went to his doctor in December complaining of a lump in the throat, followed by dysphagia. In spite of deterioration and persistence of symptoms he was not referred to hospital until *seven months* later when a gland in the neck appeared. By then he had a hopelessly inoperable carcinoma of the pharynx, and in quoting the case the writer asked whether we couldn't manage better education of the Public and *of ourselves.*

Some time ago the British Empire Cancer Campaign sent out 21,040 letters to general practitioners asking them whether they thought education of the public about cancer would be of value; 4831 replies were received (about 24%), and of these 2148 gave an unqualified "Yes," and 2683 an unqualified "No." From these figures it was deduced that general practitioners were *not* in favour of cancer propaganda. But it was quite rightly pointed out that such a deduction was very misleading, and in fact a misuse of statistics; for, in fact, more than three-quarters of the doctors didn't answer the letter at all and only one doctor in *eight* actually said "No." Lord Horder, in reporting the results of the inquiry, said that "the Campaign expresses its gratitude to the General Practitioners in the country for replying in such large numbers. This is an index of the interest which the problem arouses." I never quite understood why a 24% reply was considered a tremendous response, while the fact that three-quarters of the doctors failed to reply at all seemed to me to be an index of their *lack of interest* in this vitally important matter.

Mind you, there is a lot of opposition to the suggestion that the medical officer of health should preside over any committee to implement the scheme contained in the Ministry of Health circular (18/53) encouraging local authorities and voluntary bodies to initiate exploratory schemes in cancer education. For this and other reasons I have failed completely to get a scheme started; but, with the York and Manchester pilot schemes giving such encouragement, we must try again. I am completely convinced it's worth it, particularly when I remember Mrs. Wayneflete.

Yours ever,

PETER GURNEY.

In England Now

A Running Commentary by Peripatetic Correspondents

NOWADAYS when public-school fees are so high and when about a third of the local rate is spent on education, it is interesting to recall how some parents arranged for their children's education two hundred years ago.

A gardener, who became a nurseryman and later a small farmer, sent his son, then about six, to a small school about a mile distant and later found a young teacher to teach this elder and his younger son nearer home. With him they "learnt to read English tolerably well, and to write a little." Gilbert, the younger, was too young to profit as much as the elder, Robert, who soon "became remarkable for his fluency and correctness of expression and read the few books that came in his way with much pleasure and improvement." Their education continued thus three years when "the little seminary was broken up by reason of the master obtaining a superior situation elsewhere."

The farmer then instructed his sons himself. "He conversed familiarly on all subjects with us, as if we had been men; and was at great pains, as we accompanied him in the labours of the farm, to lead the conversation to such subjects as might tend to increase our knowledge, or confirm us in virtuous habits. He borrowed Salmon's *Geographical Grammar* for us, and endeavoured to make us acquainted with the situation and history of the different countries of the world." So wrote Gilbert the younger many years later. "My father had been a subscriber to Stackhouse's *History of the Bible* . . . and from this Robert collected a complete knowledge of ancient history." An uncle, seeking a copy of *The Complete Letter-Writer*, obtained instead "a small collection of letters by the most eminent writers, with a few sensible suggestions for obtaining an easy epistolatory style. This book was to Robert of the greatest consequence. It inspired him with a strong desire to excel in letter-writing, while it furnished him with models by some of the finest writers in our language."

"My brother was about thirteen or fourteen when my father regretting that we wrote so ill, sent us, week about, during a summer quarter, to the parish school . . . that we might have an opportunity of remedying this defect." In the next year we learn of the boys becoming acquainted with Fielding and Smollett, with Hume, and with books on English history. In the following year their former tutor became English master at a nearby school and the elder brother revised his English grammar with his former master. After a week the harvest intervened but he returned later for two weeks, during which time he learned French, bringing "home with him a French dictionary and grammar, and the *Adventures of Telemachus* in the original. In a little while, by the assistance of these books, he had acquired such knowledge of the language, as to read and understand any French author in prose. This was considered as a sort of prodigy . . ." Acting on advice to try Latin in like fashion, ". . . he purchased the *Rudiments of the Latin Tongue*, but finding this study dry and uninteresting, it was quickly laid aside." ". . . and this completes the account of his (Robert's) school education, excepting one summer quarter, some time afterwards, that he attended the parish school of Kirkoswald . . . to learn surveying."

The father was William Burness (for so he spelt his name), a native of Kincardineshire. The elder son, Robert, was born at Alloway, in Ayrshire, on Jan. 25, 1759.

* * *

The *National Formulary*, born by economics out of war, has won a sure place in the doctor's bag; and on the pharmacy shelf it stands in proud dilapidation beside the scarlet and gold *B.P.* in its fresh splendour. "Why isn't it fatter?" asks the doctor, who hopes that it will prove a convenient source-book for most of his prescriptions. "Why isn't it thinner?" says the student—though he is likely to go on to grumble at the omission of radioactive isotopes. I suspect that the Formulary Committee could have produced as many different formularies as there are county cricket clubs. They must have known moments of anguish in deciding what to drop. Preparations that they *have* dropped are listed in the new edition, like loyal servants honourably retired; and so doctors can catch by the coat tails an old friend on

the way out, by writing, for instance, Solv. Hydrarg. Perchlor. *N.F.* '52.

The committee cannot hope to please everyone all the time. But in its choice of pollarded Latin for titles of preparations it runs the risk of pleasing hardly anyone at any time. Competent classicists will shudder at the hideous mutilation of a fine language; and the medical student will wonder why the committee cannot march in step with the compilers of the *B.P.* and *B.P.C.* by opting for good plain English. Anyhow, jubilation will be unconfined in the Potteries, whose craftsmen still make a whole range of receptacles embellished with the truncated Latin titles of obsolete Galenicals.

* * *

Our pooser hole was made to aid our latest cat whom we took because she was on the way to the gas chamber. Our problems were the same as those of your correspondent last week, but now we have a two-way flap of hardboard which looks decorative and stands out at 45° with the slightest wind. In cold weather the house gets icy. We have had to increase the lagging on all the pipes and buy a special low-wattage anti-freezer for the water tank. All is not on the debit side however, because when we bought our new puppy it was small enough to use the same hole. Training was easy, but we are paying for it now because the hole is too small and the puppy won't bark to be let out. She just sits in front of the hole on one side and because she can't get out won't let the cat in from the other.

Our present problem is fairly simple—whether to spend the money on further insulation if we enlarge the hole or just wait and buy a new carpet later. The cost seems to be about the same.

* * *

Life in most hospitals passes quietly, and any minor departure from routine, such as the ejection of the residents' piano from an upstairs window, is liable to hit newspaper headlines. Our latest claim to fame began with night sister's discovery of an unwanted man in the sluice. For reasons still not quite clear, the resident obstetric officer was summoned to deal with her attendant vasomotor phenomena, and, since resident obstetricians tend to spring from a small-statured race, our colleague saw fit to bear a long stretcher-pole under his arm for protection. Meanwhile the intruder had vanished without trace and the police decided to bring their bloodhound into action. A large, sad-faced animal called Pluto was duly brought to the scene of the incident; but, overwhelmed by a host of new smells, he shook himself violently, chased his tail a few times, and made off in the direction of the labour ward where he barked loudly at a placenta lying in a bowl. The commotion woke the babies in the nursery, who all started yelling at once. Pluto took to instant flight and, after a careful search, was discovered ten minutes later in the grounds, digging a hole. The sergeant who had long since despaired of finding the right scent, then announced that he would take the dog for one last frisk before retiring to the station. This was a good cue for making some tea; and, with Pluto contentedly munching an underdone sausage from the night-nurses' supper, a good time was had by all.

* * *

The patient's complaint was worms—alleged to be three to six inches long and wriggling. Suggestions for treatment were many. Worm powders and drenches: perhaps unreliable, and difficult to administer. Someone proposed waiting till night time when the worms come out, and then transfixing them or seizing them with dissecting-forceps. He must have been a little mixed in his zoology; perhaps he was thinking of threadworms. Another method considered was to bang on the surface with a hard object; the worms then come out to see what is going on, and can be grasped firmly. This is too unkind to the patient. The best suggestion so far is to send for a thrush. This is not an example of one disease driving out another. I forgot to mention that the patient is my lawn.

* * *

"Doctor said 'e 'ad chain-smoke breathing."

Letters to the Editor

LEUKÆMIA AND ANKYLOSING SPONDYLITIS

SIR,—A conference was recently convened by the Medical Research Council to consider new ways of inquiring into the causes underlying the present rise in the death-rate from leukæmia. At this conference a memorandum was presented drawing attention to an apparent association between leukæmia and ankylosing spondylitis. This information was based on a rather limited number of instances, and the members of the conference considered it very desirable that further evidence should be collected on this question. The possible association of leukæmia with ankylosing spondylitis is a curious one, but it may well be one that has been noted in individual patients by some of your readers.

Dr. W. M. Court-Brown, a member of the Council's External Scientific Staff, at present working at the Department of Medicine, The Postgraduate Medical School of London, Hammersmith Hospital, London, W.12, is collecting the relevant data on this subject. He would be very grateful if any of your readers who may have witnessed the occurrence of leukæmia in a patient suffering from ankylosing spondylitis would write to him.

Medical Research Council,
38, Old Queen Street,
London, S.W.1. H. P. HIMSWORTH.

MENTAL HEALTH AND PUBLIC HEALTH

SIR,—I welcome the fact that this subject has been raised in your leading article of Jan. 15. It is perhaps not generally known that the curriculum for the diploma in public health as laid down by the General Medical Council is no rigid set of rules and that mental health appears as part of both the preliminary and final courses, the time which may be devoted to the subject being left to the discretion of the teaching body which provides the course of instruction. It is thus possible for a comprehensive course in mental health to be given within this curriculum.

In Edinburgh we do make a serious attempt by means of a series of lectures, demonstrations, and surveys to keep our students abreast of modern knowledge in public health and social aspects of mental health.

I agree that "What is there to teach anyway?" is an important question. There is no room for complacency about what is already known concerning mental health. A substantial amount of what goes into present writings is invalidated bypothesis, stimulating as a field for further research, but in itself not enough. Much of what is being done in other countries and much of what is now taught under the name of mental hygiene is little more than early treatment. What is urgently needed is research into problems of prevention of mental illness: who are the vulnerable members of the community? how can they be found? and how can we help them?

These are the most important points, but since you have raised the question "Who is the proper person for visiting and education in a mental health service?" I should like to comment on it. The health visitor is, by her vocation and early training as a sick nurse in general wards, quite unsuited for the task and her later training does little further to equip her to enter the field of mental health. The suggestion that she is better informed about these matters than the public-health doctor is untrue for Edinburgh and I should be surprised if it holds elsewhere. In my opinion a more suitable person for this type of work would be a psychiatric social worker or an unspecialised social worker with suitable supervision, but even their training could be improved for this purpose.

Usher Institute
Edinburgh, 9. DONALD CAMERON.

TUBERCULOSIS IN IMMIGRANTS

SIR,—Dr. Doig's observations (Jan. 15) on tuberculosis in the young people of the island of Lewis are most interesting, and I have no doubt that the high incidence of tuberculosis in Irish emigrants to England is also due to the minimal, undiscovered lesions which they take with them, or to reinfection in England, and not, as Hess and Macdonald [1] have suggested, to any undue susceptibility to infection. Emigration from Ireland to Canada, the U.S.A., Australia, and New Zealand has been going on constantly since the end of the war and so far there have not been any reports of a similar incidence of tuberculosis there. In order to be admitted to those countries, it is necessary for one's lungs to be radiologically normal; but tuberculin tests are not done, and it would seem that, if an Irishman has a normal radiograph of his chest at the time of emigration, susceptibility does not matter greatly.

Hess and Macdonald accepted the type of lesion in their Irish patients as evidence of recent primary infection on the strength of Wallgren's [2] time-table of tuberculosis; but this time-table is applicable only to children, and in adults it is rarely possible to decide the time of primary infection by studying the lesion alone.

Young adults tend to develop relatively acute lesions, such as pleural effusions and exudative infiltrations, even if they have been tuberculin-positive since childhood. Extreme examples of this phemonenon are described by Rich,[3] who points out that, although the adult African typically contracts an acute progressive type of disease which suggests a recent primary infection, at necropsy evidence of healed childhood disease is very commonly found. Another extreme example is the alteration in the type of lesion which is a result of severe privation. In Europe during the war, acute tuberculosis was the rule and this was related to the environment and not to the tuberculin state of the patients. On the other hand, Rich and others have shown that primary tuberculosis in the adult may be indistinguishable clinically from the reinfection type of disease. My own experience of a country district of Northern Ireland suggests that progressive primary tuberculosis in adults is extremely uncommon, and it seems quite reasonable to suppose that the unfavourable surroundings in which Irish emigrants find themselves in England are enough to account for the rather florid disease which they develop.

I think, however, that it is in their invocation of the "epidemiological phase" of tuberculosis in Ireland that Hess and Macdonald go most seriously astray.

They believe that because of later acquaintance with tuberculosis the rural Irish have less resistance to tuberculosis than the English. This argument is difficult to follow, because in those parts of Ireland where there is a high proportion of negative tuberculin reactors there is a lower tuberculosis death-rate than in Southern Ireland as a whole. Flynn and Joyce [4] found in County Roscommon only 14·5% tuberculin-positive at the age of 18. Admittedly only 69 persons of this age were tested and these are not representative of a whole county; but there would seem to be some indication that many young adults there are susceptible to infection, if a negative tuberculin reaction is taken as an index of susceptibility. Furthermore, Flynn and Joyce assume (I am sure quite correctly) that the number of tuberculin-negatives is increasing from year to year; yet in 1943 the tuberculosis death-rate in County Roscommon was 100 per 100,000 and in 1953 it was 29. But apparently the "epidemiological phase" in 1943 was more favourable than 10 years later because there were more positive tuberculin reactors in 1943. A death-rate of 100 per 100,000 as recently as 1943 indicates that very widespread tuberculous infection has existed in the Irish countryside, and it is impossible to see how a reduction by nearly 75% of this death-rate in 10 years can be consistent with an increasing susceptibility to the disease.

It seems fair to presume that the deaths in County Roscommon have followed the usual trend of a falling tuberculosis death-rate, towards the upper age-groups. Yet at the age of 30+, Flynn and Joyce found that 66·6% were tuberculin-positive, although here again the number of persons tested was not an adequate sample.. It is most probable that in Roscommon deaths from tuberculosis are not occurring in the traditionally susceptible tuberculin-negative young people but in the traditionally resistant tuberculin-positive, mature, middle-aged or elderly adults. The same is true of all communities from which tuberculosis is receding. There are large areas of the U.S.A. where the tuberculosis death-rate is negligible, where scarcely any of the children or young adults are tuberculin-positive, and where the deaths are mainly among the elderly who, having spent their childhood in a time when tuberculosis was prevalent, are the most likely to have been exposed to infection early in their lives. Conversely, in populations with high tuberculosis death-rates there is always a high proportion of positive reactors, and a high reactor-rate in children is always associated with a high death-rate in young adults. It is wise to remember that no community has yet controlled tuberculosis by "tuberculinisation" of its members. In any country where 100% of the people are tuberculin-positive it can be guaranteed that tuberculosis will be the most important cause of death.

It seems to me that the "virgin soil" theory of tuberculosis is plausible but quite fallacious and unable to withstand critical analysis. Destructive tuberculosis is a disease of tuberculin-positive people; and acquired resistance, while it may influence the course of the disease in individual patients, does not seem to exert any significant effect in preventing new cases. We must face this fact if we are ever to resolve the vast perplexity of the immunology of tuberculosis.

Dungannon Chest Hospital,
co, Tyrone, Northern Ireland. E. F. JAMES.

1. Hess, E. V., Macdonald, N. *Lancet*, 1954, ii, 132.
2. Wallgren, A. *Tubercle*, 1948, **29**, 245.
3. Rich, A. R. Pathogenesis of Tuberculosis. Oxford, 1951.
4. Flynn, M. P., Joyce, J. C. *Tubercle*, 1954, **35**, 270.

IMPOTENCE

SIR,—Dr. Tuthill (Jan. 15) seems to me to deserve great credit for putting forward an original, logical, and therapeutically valuable way of looking at cases of impotence. I do not see cases of impotence, but it is one of a group of conditions, such as enuresis, in which physiological, pathological, and psychological mechanisms are interwoven. Of the last, physiological and pathological, superficial and deep, primary and secondary factors are often difficult to sort out. It is often necessary to explore some way along physical lines, then for simple psychological causes, returning if necessary to look for rarer physical causes, and then again returning if need be to look for deeper psychological causes. Some of the patients who failed to reply to Dr. Tuthill's questionary may well have needed deeper investigation but he has shown that approaching the problem physiologically often gives speedy and lasting help. It would be of interest to hear the views of others with experience of treating dyspareunia and the results of their methods; and it is also to be hoped that Dr. Tuthill will report on the results of a similar fresh approach to dyspareunia and frigidity.

London, S.W.1. RONALD MAC KEITH.

SIR,—It was interesting to read Dr. Tuthill's paper on impotence, and few would disagree with some of his views. It was rather surprising, however, that a psychiatrist should decry psychological methods of treatment and praise the use of male hormone, for which he claims success. Most endocrinologists would confirm the statement that testosterone is not helpful in cases of functional impotence, and it has been my experience that common-sense psychiatry is often adequate.

If "erectile capacity is not a constant, but is reduced by stress, worry, or failure," why should small doses of exogenous testosterone increase it?

Erection is partly dependent on male-hormone secretion from the testes but can occur without it. For example, a eunuchoid patient, aged 34, with primary testicular agenesis and the penile development of a prepubertal boy was able to have intercourse regularly with his wife before he was developed maturely by testosterone therapy.

An adult normal male whom I saw after his metamorphosis into a pseudo-female had been treated with large doses of œstrogen for two years. He told me that he was able to obtain rigid erection and his potency still persisted when his testicles were removed. Even when a plastic surgeon had divided the corpora cavernosa, which were built into the form of labia, painful priapism necessitated their later amputation.

Dr. Tuthill's case-records tell us nothing of the state of the gonads of his patients. If these were normal, then presumably there was no reason why male hormone should not be secreted in adequate amounts.

I hesitate to comment on the inefficacy of oral methyltestosterone therapy in such cases. An implant of 100–200 mg. testosterone in 25 mg. tablets would possibly last some months with the daily absorption of a few milligrammes at first. In several cases of functional impotence with normal gonads, judged clinically and by testicular biopsy, I have administered doses of 300 mg. of testosterone phenylpropionate or testosterone isobutyrate twice weekly without any significant effect over periods of some weeks.

Let us hope that the proprietary pill containing amphetamine sulphate, strychnine, arsenic, and yohimbine is categorised in group 6 of the Standing Joint Committee's classification of proprietary medicines. I thought that yohimbine, like cantharidin, was no longer fashionable as an aphrodisiac, and in fact I have yet to hear of any drug which has been proved to have this power in the normally developed male.

I feel that Dr. Tuthill is too modest and that his records of successful hormone treatment of erectile impotence are really a tribute to his psychiatric technique and experience.

Bristol. G. L. FOSS.

SIR,—Dr. Tuthill's article is valuable for the encouragement it gives us to use simple adjustment, rational counsel, and physical therapy. Yet as regards treatment it leaves us largely in the air. Treatment seems to consist in advising the abandonment of restraint and prescribing endocrine therapy as a reinforcement. One is reminded of the adage that cases of impotence are either very easy or very difficult to treat; and perhaps Dr. Tuthill has not ony re-discovered this fact, but has added to it counsel of value—namely, that we should adopt simple reassurance on rational lines before more disturbing techniques are considered. Unfortunately he has too little to say about the difficult cases. His comment on sex fantasies deserves consideration, and the whole paper is a worthy contribution to the literature on this subject. The scorn with which he regards medical psychologists—men as sincere as he—is regrettable.

St. George's Hospital, Hornchurch, Essex. D. T. MACLAY.

"TAKE A COUPLE OF FAT VIPERS"

SIR,—A critical mind was possessed by the anonymous author of the second edition of the *New Dispensatory*, published in London in 1746. In discussing the relative advantages of live and dried vipers in making vinum viperinum, he writes:

"Whether they communicate to the wine, either when used fresh or dry, so much virtue as they are supposed to do, is greatly to be doubted. Some compositions under this name have been highly celebrated, as restoratives, in debilities and decays of constitution; but what virtues of this kind they possessed, were supplied chiefly from other ingredients. . . . The viper is doubtless a highly nutritious food, and in some kinds of weakness, and emaciated habits, is not undeservedly looked upon as a good restorative. To answer any valuable purpose, fresh vigorous vipers (not such as have been long kept alive after they are caught) should be liberally used as food: the wines and tinctures from them can scarce be supposed to receive any considerable virtue from the animal; the dry flesh brought us from abroad is entirely insignificant."

This dispensatory describes the preparation of Theriaca Andromachi, or Venice Treacle, one of the electuaries "of wild exuberance of composition which the superstition of former ages brought into vogue," and lists 61 ingredients. It is interesting to learn from it that, while "the London College have somewhat facilitated the preparation of these medicines by omitting the hydechroi and dried vipers . . . the College of Edinburgh, paying very little deference to antiquity or common prejudice, have ventured at length to discard these venerable reliques."

The Royal Hospital, Sheffield, 1. PETER NIXON.

INTRAVENOUS HYDROCORTISONE

SIR,—Hospitals holding stocks of corticotrophin and cortisone have now received from the Ministry of Health a small supply of hydrocortisone solution suitable for intravenous administration. Until recently very little of this preparation has been available in this country and few reports have been published about its use. In May, 1953, the Medical Research Council made available 1·2 g. of an aqueous suspension of hydrocortisone free alcohol (Merck), and after preparation by the method described by Thorn et al.[1] this was used for intravenous infusion. Certain practical details in the use of intravenous hydrocortisone have been emphasised by our small experience and may be of value to others who are now able to use this new preparation.

Adrenal-cortical Insufficiency

In severe adrenal-cortical insufficiency the first step in treatment is to raise the level of circulating adrenal-cortical hormone. If the patient is conscious and able to retain oral medication, cortisone tablets will produce a significant increase of the plasma 17-hydroxycorticosteroids in thirty to sixty minutes.[2] If treatment by mouth is impossible, intramuscular cortisone is of limited value because of its very slow absorption-rate. Hitherto the only preparation capable of producing a rapid increase of circulating hormone has been adrenal-cortical extract given intravenously. Solutions of hydrocortisone are much more potent and likely to replace adrenal-cortical extracts for use in emergency.

Severe adrenal-cortical insufficiency requiring intravenous therapy may take the form of an addisonian crisis. If this develops gradually, depletion of sodium and extracellular fluid play an important part in the production of symptoms. When treating a case of this type the concentrated solution of hydrocortisone (100 mg. in 20 ml. 50% alcohol) should be added to 1 litre of physiological saline.

On the other hand studies have shown that rapidly developing adrenal insufficiency can quickly result in severe hypotension without any external loss of body sodium.[3] In practice this may arise in the course of adrenal surgery, when a patient with Addison's disease or cortisone-induced adrenal atrophy is subjected to a severe stress and possibly in cases of adrenal hæmorrhage. In these cases there is no sodium depletion, and the hydrocortisone should be given in isotonic glucose solution.

Two cases of addisonian crisis have been treated with intravenous hydrocortisone. Both were of the slowly developing type, one due to inadequate replacement therapy in an adrenalectomised hypertensive with impaired renal functions, and the other in a previously undiagnosed case of Addison's disease. The hydrocortisone had been prepared for use in adrenal surgery and was therefore made up in isotonic glucose solution. Furthermore, so that the clinical and biochemical effects of the infusion could be studied, no other steroid therapy was given during the infusion or for some hours afterwards. The results were disappointing; although there was transient clinical improvement the effect soon disappeared and in the patient with renal insufficiency the blood-urea and plasma-potassium levels rose. Both patients responded subsequently to additional salt and oral and intramuscular cortisone.

The poor response of these two patients may be attributed to giving the hydrocortisone in isotonic glucose rather than saline solution and to the fact that no additional steroid therapy was given at the same time. Hellman et al.[4] have shown that hydrocortisone disappears from the circulation very quickly after the completion of an infusion. As a result

1. Thorn, G. W., Jenkins, D., McCracken, B. H., Garcia-Reyes, J. A., Reddy, W. J. *Trans. Ass. Amer. Phycns*, 1952, **65**, 281.
2. Nelson, D. H., Sandberg, A. A., Palmer, J. G., Tyler, F. H. *J. clin. Invest.* 1952, **31**, 843.
3. Pearson, O. H., Hollander, V. P., West, C. D., Whitmore, W. F., Randall, H. T. *Ibid*, p. 653.
4. Hellman, L., Bradlow, H. L., Adesman, J., Fukushima, D. K., Kulp, J. L., Gallagher, T. F. *Ibid*, 1954, **33**, 1106.

of our experience with these two patients we suggest that when intravenous hydrocortisone is used for the treatment of a case of addisonian crisis it should be given in isotonic saline solution and that injections of cortisone acetate should be given four-hourly in the initial stages. Cortisone acetate by mouth should be started as soon as possible. Thorn et al.[5] have suggested that the intravenous hydrocortisone should be given at a rate of 25 mg. per hour for the first two hours and 12·5 mg. per hour subsequently; they also advise giving 5–10 mg. of deoxycortone intramuscularly in patients with a high plasma-potassium level.

Two patients developed acute adrenal insufficiency shortly after operation. One patient had had a total adrenalectomy for Cushing's syndrome; and, although she had received 600 mg. of cortisone intramuscularly in the previous twenty-four hours, profound hypotension developed twelve hours after operation. An intravenous infusion of hydrocortisone in 5% glucose solution at a rate of 12·5 mg. per hour produced an immediate and dramatic response. The second patient had had cortisone therapy for two months before splenectomy was undertaken for hæmolytic anæmia. It was anticipated that the patient's adrenals would be atrophic and unable to respond to the stress of surgery; therefore 350 mg. of intramuscular cortisone was given in the twenty-four hours before the operation. A further 150 mg. was given in the next twelve hours, but fourteen hours after operation there was a rapid fall of blood-pressure. Intravenous hydrocortisone in isotonic glucose was given. Initially the rate was 6 mg. per hour, and the blood-pressure moderately improved; when the rate was increased to 12 mg. per hour it returned to normal.

Postoperative Shock

Rukes et al.[6] reported good results from intravenous hydrocortisone given for the treatment of severe postoperative shock in the absence of any evidence of adrenal insufficiency. We gave two infusions to one patient in this condition, but although there was slight improvement it was not maintained and the patient ultimately died.

Diagnosis

The use of intravenous hydrocortisone as a diagnostic test for differentiating between tumour and hyperplasia in cases of Cushing's syndrome or adrenogenital syndrome was described by Jailer et al.[7] If effective it would have the advantage of being much quicker as a diagnostic procedure than the usual intramuscular cortisone suppression test. We obtained a paradoxical result from this test in a case of Cushing's syndrome. Although an infusion of 100 mg. of hydrocortisone given over four hours failed to reduce the 17-ketosteroid output, no tumour was found at operation.

A full account of these studies will be published in the April issue of the *Archives of the Middlesex Hospital*.

Institute of Clinical Research, The Middlesex Hospital, London, W.1. JOHN NABARRO.

HEXAMETHONIUM AND THE PUPIL

SIR,—Several years ago, while using hexamethonium bromide in the investigation of the vasomotor reactions in patients suffering from poliomyelitis, I noticed some interesting changes in the pupillary reactions of these patients. The changes included bilaterally equal mydriasis or miosis, anisocoria, isolated loss of the pupillary reflex to light, isolated diminution of the pupillary reflex to convergence-accommodation, and loss or diminution of both the light and convergence-accommodation reflexes.

Of 9 patients who received intramuscular injections of 40–60 mg. of hexamethonium bromide, 3 showed an isolated bilateral loss of the light reflex, 3 showed a sluggish convergence-accommodation reflex while the light reflex remained brisk, and 3 showed sluggishness of both reflexes. 4 of the 9 patients had an equal mydriasis, 3 had a marked anisocoria, and 2 had no change in pupil size.

It would be interesting to know if there have been any detailed investigations of the effects of ganglion-blocking agents on the pupillary reflexes—for example, the injection of a blocking agent in graded doses into the internal carotid or ophthalmic arteries. Such an investigation, particularly by close-arterial injection into the ciliary ganglion, might throw some light on the mechanism of the Argyll Robertson pupil.

Hoddesdon, Herts. A. MCPHERSON.

5. Thorn, G. W. Jenkins, D., Laidlaw, J. C., Goetz, F. C., Dingman, J. E., Arons, W. L., Streeten, D. H. P., McCracken, B. H. *New Engl. J. Med.* 1953, **248**, 284.
6. Rukes, J. M., Orr, R. H., Forsham, P. H. *Metabolism*, 1954, **3**, 481.
7. Jailer, J. W., Gold, J. J., Wallace, E. Z. *Amer. J. Med.* 1954, **16**, 340.

SEX OF MEDIASTINAL TERATOMATA

SIR,—Following on the recent observations on sexing by means of nuclear characteristics, and more particularly on the findings by Hunter and Lennox[1] in relation to the sexing of teratomata, it was decided to "skin sex" our small collection of mediastinal teratomata. The sections were reviewed and five cases selected in which reasonable areas of squamous-cell formations were found. For controls skin biopsies were taken from six known males and six known females. The findings were as follows:

Patient		*Teratoma*	
Age at operation	*Sex*	*"Skin sex"*	*Position*
17 yr.	M	F	Anterior
18 yr.	M	M	Posterior
17 yr.	M	M	Anterior
7 days	F	F	Anterior
22 yr.	F	F	Thymic

Having found one apparently contra-sexed teratomata in the series, I approached Dr. Lennox, who kindly agreed to re-examine the material, provided that all indication of sex was withheld until his examinations were complete. His findings fully confirmed mine, and he was confident of the accuracy of the sexing in the case of the contra-sexed teratoma.

The only comment I would make is in relation to the discussion in the paper by Hunter and Lennox.[1] In males the proportion of XX, XY, and YY zygotes should be 1 : 2 : 1. Clearly the heretical "supermale" YY is a potential novelty, and the investigation of two questions may produce additional evidence: (1) does the proportion of "female" teratomata in males approach $^1/_4$ or $^1/_2$ as the statistical limit?; (2) is there a chromatin pattern characteristic of the (assumed) YY zygote?

Sims Woodhead Memorial Laboratory, Papworth Hospital, Cambridge. D. BARRON CRUICKSHANK.

HARDENED FATS AND LUNG CANCER

SIR,—Professor Yudkin, in his letter of Jan. 1, claims that deficiency of essential fatty acids has never been shown definitely to occur in man. But Burr[2] has referred to the study of eczematous patients in whom the blood-level of both arachidonic and linoleic acid was lower than normal; and he added: "Although the results with human subjects are not so uniform as those with experimental animals under controlled conditions, it seems clear that many people are receiving less than their optimal requirement of linoleic acid." He also mentioned that an adult "maintained for six months on a diet which produced deficiency symptoms in young rats felt no ill effect, but he lost weight, underwent a change in respiratory metabolism, and suffered a marked drop in the arachidonic and linoleic acid content of the serum lipids."

It is well known that hydrogenation of fats eliminates essential fatty acids and that the hardened fats so produced are used in margarine and other foods. That does not mean that these foods are free from essential fatty acids but only that an increased consumption of these foods reduces the content of essential fatty acids in the diet. Burr said:

"From a survey of the national dietary, it has been estimated that linoleic acid constitutes 1% of the average American's food. It is likely that many people consume less than this amount, which has been suggested by some as the

1. Hunter, W. F., Lennox, B. *Lancet*, 1954, ii, 633.
2. Burr, G. O. *In* Dietotherapy, edited by M. G. Wohl. Philadelphia, 1945; pp. 74, 75, 80.

amount required by rats. It is not surprising, therefore, that there are individuals who, because of low intake or abnormally high requirement, respond to additional unsaturated fatty acids in their diet."

Lung cancer varies between town and country and from province to province, and so does diet. A comparison only between whole countries, such as Professor Yudkin makes, cannot therefore tell us much. The relatively low prevalence of lung cancer in females may be connected with the fact that female laboratory animals require less essential acids than males.

Copenhagen. JOHAN NYROP.

STRANGE LANGUAGES

SIR,—I feel somewhat diffident in replying to Dr. Wayne's inquiry in your issue of Jan. 1; but may I point out that a *Polyglot Medical Questionnaire* in twelve languages was published by H. K. Lewis & Co. two years ago? It depends, of course, what he means by "strange languages," but I think he might find this book helpful—especially if he is working in dockland. It contains both popular and medical terms and the translations have been done by doctors who speak English as well as their own tongue.

Droxford, Hampshire. S. CHALMERS PARRY.

CHEMOTHERAPY OF LEPROSY

SIR,—Dr. Jopling's letter (Jan. 8), pointing out that results of sulphone treatment of leprosy in England are less favourable than I had found in Nigeria,[1] emphasises a point I myself made in the article in question. I discussed the less favourable reports made also in the U.S.A., since no published reports were available for this country. It appears possible that a racial factor influences the severity of leprosy and the results of treatment.

As Dr. Jopling surmises, I do not say that all is well with the treatment of leprosy; but I, and all other workers I know, do say that all is infinitely better than it was before sulphone treatment was introduced. If I were completely satisfied with sulphone treatment, I should not have spent years on experimentation with the other chemotherapeutic agents mentioned in my article.

I would discuss briefly three points.

Firstly, in spite of what Dr. Jopling writes, sulphone treatment of leprosy in England can give excellent results. Although, through having been long abroad, my knowledge of leprosy patients in this country is very limited, I know of a few (though there must be more) English persons who, thanks to sulphone treatment, have fully recovered from lepromatous leprosy and are now living normal lives with no disabilities or deformities.

Secondly, Dr. Jopling's surmise that my patients in East Nigeria were easily cured because the disease had been rendered mild by the "clan segregation instituted some 20 or more years ago" does not bear examination. When I arrived in Nigeria in December, 1947, I found in the Uzuakoli area about 12,000 patients under treatment and a degree of isolation at the Uzuakoli Settlement and its fifty outstations, under Dr. T. F. Davey. For our experiments with chemotherapy, to begin with we chose and treated in the one centre about 200 of the worst of these 12,000 cases, and particularly those which had become steadily worse despite many years of treatment with hydnocarpus oil. With these patients we had many difficulties such as Dr. Jopling describes and we described in previous articles; but in time the difficulties were overcome and cure was obtained, as recorded in my recent article. During the next few years we gradually collected for special study another 900 highly active but newly diagnosed cases with no previous treatment, many of them from areas where there was no organised clan segregation. In these cases the difficulties were very much less, and slow recovery is being seen in practically all of them.

Finally, my experience is that with prompt diagnosis and early treatment, most of the complications mentioned by Dr. Jopling do not often arise or are not serious. I strongly suspect that in this country, for a variety of reasons, patients have not come under effective treatment soon enough to avoid the complications of treatment, which can be so troublesome, but which do subside in time. We certainly found that in our Nigerian patients, with their early recognition of leprosy and their determination to get better and to continue treatment in spite of difficulties, we were fortunate in having splendid material to work with.

It is possible, as I have already suggested, that a racial factor helped us; but, even so, the results recorded on such a large scale in a country where leprosy is a major problem, do justify the opinion that a major revolution in treatment has occurred; and I should like here to acknowledge our indebtedness to the workers of many nations—particularly German, French, and American, as well as British—who contributed to this revolution.

1. Lowe, J. *Lancet*, 1954, ii, 1065.

British Empire Leprosy Relief Association, 8, Portman Street, London, W.1. JOHN LOWE Medical secretary.

SULPHONAMIDE SENSITIVITY OR DISSEMINATED LUPUS?

SIR,—Dr. Fox rejected the diagnosis of disseminated lupus erythematosus, in the case which he reported in your issue of Jan. 22, on the ground of a single negative marrow examination, done one month after the patient had lost her fever. Had this examination been negative during the pyrexial period lupus erythematosus would still have been the most likely diagnosis. The age and sex of the patient, the previous œdema of the face, the onset in summer at the seaside, the malaise, prolonged pyrexia, the morphology and distribution of the eruption, the rapid sedimentation-rate, the loss of hair, and the tedious illness all point to disseminated lupus erythematosus. This is more than an academic point, for the prognosis is serious.

The sulphonamide may have activated the disease, but it is not justifiable to regard this as a case of pure sulphonamide sensitivity. In disseminated lupus erythematosus a peculiar type of hypersensitivity develops for an unknown cause, spontaneously. Attacks may be precipitated by exposure to sunlight or the ingestion of sulphonamides.

Edinburgh, 12. ALAN LYELL.

MASKED EPILEPSY

SIR,—Dr. Kempton (Jan. 22) tries to hoist me with my own petard. He accuses me of ascribing every disease to one cause—epilepsy. If he read my paper carefully he would find that the 7 cases were drawn from among 1400 patients and that I recommended a thorough investigation to exclude other causes of the symptoms. In the *British Medical Journal* of Jan. 15 I have listed thirteen causes of abdominal pain in addition to tuberculous mesenteric adenitis. Dr. Kempton prefers to stick to the term "periodic syndrome," which he admits is provisional. He asks whether a diagnosis of epilepsy is of benefit to anyone. The answer is that sooner or later a child with periodic pain will become a victim of unnecessary abdominal operation, as described by Moore in America. More important is the fact that occasionally one of the patients will have a severe and prolonged attack from which he will not recover. Such a case was reported by Brown.[1] If we can prevent only one of these tragedies then it is worth all the "distressing social implications" of revealing the true diagnosis to the parents. In my experience parents are usually very sensible and only too pleased to have a rational explanation of a disease which has obviously puzzled them and their advisers. They are even more grateful to find it cured.

Dr. Scott asks about toxic effects of phenobarbitone. In case 7 the drug reduced the incidence of headache, but made it more severe when it did occur. This is just what happens with grand mal sometimes. I have not noticed any behaviour disorders or irritability; indeed

1. Brown, R. J. K. *Brit. med. J.* 1954, ii, 1033.

in some cases these complaints were relieved by phenobarbitone.

In your annotation of Jan. 8 you say that the choice of the term "masked epilepsy" is perhaps unfortunate. I maintain that it is simple and expressive. The comment that it was used when the electro-encephalographic picture was less well defined does not alter the fact that in these cases epilepsy wears a mask and is therefore unrecognised. It is unrecognised by the parents, by the family doctor, and by the consultant (including myself when I first saw cases 5 and 6). An eminent neurologist who wishes to remain anonymous has written to me to say that in his large experience he has seen very few cases and he considers the condition to be very rare. One of the penalties of living on an eminence is that one cannot see in detail what goes on at lower levels. There is no reason why these cases should ever come to the notice of a consultant in neurology. Their fate is more often to have their appendices removed, to be told that there is nothing the matter with them, or to be classed as having abdominal pain of unknown origin. Occasionally in desperation the family doctor gives them phenobarbitone, considering it to be a universal sedative. This cures them, and everyone is happy. They are still suffering from masked epilepsy, though no-one ever knows it. Is this an adequate reason for abandoning a term which was good enough for Sir Frederic Still? Your alternative, "visceral epilepsy," is not quite so convenient, for it can hardly be considered to cover such manifestations as night terrors, sleep-walking, and odd behaviour.

Bath. HUGH R. E. WALLIS.

OCCUPATIONAL HEALTH SERVICE

SIR,—May I express my regret to your correspondents for the delay in replying to their letters.

As one who for some ten years served in the oldest and most comprehensive occupational health service in the country—namely, that of the Royal Navy—I fully appreciate the necessity for clinical experience and close contact with every aspect of the work to be undertaken. The acknowledged foundation of that occupational health service is preventive medicine.

Someone will require the answers to questions of relative need with regard to the health hazards of occupation.

If the physician in occupational health is to supply the answers he must have the necessary information available; if it is not available he must obtain it. The study of such data in regard to occupation inevitably becomes occupational epidemiology. Let those who reject the claims of the epidemiologist to comment in the field of occupation consider the alternative, which will be the appointment of a lay assessor of the data accumulated by the creation of a comprehensive service. If the clinicians wish to argue with a lay administration or the trade unions or the employers, do they consider that the medical data should be handled by medical men or by laymen? Someone will have to comment in an informed manner on the over-all situation, particularly when, after the first enthusiastic setting-up of an occupational health service, the administration having overreached themselves in extravagant promises, lay the chill hand of economy on the service. Then is the time for the full evidence of real need to be available.

Professor Lane [1] appears to be unable to distinguish between industrial *medicine* and occupational *health*. The proposed service is an occupational health service; many occupations have no relation to the factory. For example, female hairdressing is said to be the second biggest women's occupation. Delivery-rounds, the fishing industry, the building trades, catering, office work, ambulance work—these occupations have no link with the chromium-plated factory surgeries which appear to be the ideal for some. In replying to the query of Professor Lane as to what medical officers of health have done for occupational health, I would refer him to the information in his own social-medicine unit, and say that in the vast occupations of being an infant, of being a school-child, of being a mother, and of being an old person, preventive medicine has improved health standards beyond all knowledge in the past hundred years. The same preventive health outlook is necessary during the forty hours or so each week in which the adult earns his living to support himself during the remainder of his waking and his sleeping hours.

1. Lane, R. E. *Lancet*, 1954, ii, 1329.

Health Department, Brighton. W. S. PARKER Medical Officer of Health.

TUMOURS OF THE GLOMUS JUGULARE

SIR,—An interesting point arises from Dr. Holesh's paper of Jan. 22. Cell nests, resembling the glomus caroticum, are found not only at the bifurcation of the common carotid artery but also in the adventitia of the ascending aorta, its arch, or in the innominate artery, in the ganglion nodosum of the vagus nerve, in the adventitia of the jugular bulb, or along the course of the tympanic nerve (glomus jugulare); and, in chimpanzees, they have been discovered in the orbit in relation to the ciliary ganglion.[1] Tumours arising from each of these sites have now been described [2]—excepting the orbit. One of our series of patients with glomus-jugulare tumours [3] had a very marked proptosis, and at necropsy the tumour was seen to lie in the orbit, but it appeared to have invaded it by extension forwards from the petrous area, rather than to have originated there.

Dr. Holesh's case 4, however, also showed a proptosis, but some years before any of the other signs developed, and in view of the well-known tendency for the glomus tumours to form concurrently in two or more sites, it seems worth considering the possibility that the original site of tumour formation in this case might have been the orbit, and that this type of tumour might be included in the differential diagnosis of causes of unilateral exophthalmos.

Another feature in the diagnosis of these tumours is their tendency to present as a tongue of tumour inside the lumen of the jugular vein, and to be found as a pulsating swelling, having a palpable thrill and audible bruit, under the lobe of the ear, between the mastoid and the jaw. This was most marked in 1 of our series,[3] and in 2 of the cases of Henson et al.[4]; and it has occurred in just under 10% of all reported cases.

Midland Centre for Neurosurgery, Birmingham, 41. EDWIN R. BICKERSTAFF.

1. Lattes, R., Waltner, J. G. *Cancer, N.Y.* 1949, **2**, 447.
2. Lattes R. *Ibid*, 1950, **3**, 667.
3. Bickerstaff, E. R., Howell, J. S. *Brain*, 1953, **76**, 576.
4. Henson, R. A., Crawford, J. V., Cavanagh, J. B. *J. Neurol. Psychiat.* 1953, **16**, 127.

HEARING TESTS

SIR,—I should be grateful if you would give me an opportunity of replying to the letter from Miss Whetnall in your issue of Jan. 15. The title of the statement to which she refers, and which you were good enough to publish for the Medical Research Council on Jan. 1, was The Sweep-frequency Method of Making Screening Tests of the Hearing of School-children. The council did not ask me to draft a comprehensive statement on the ascertainment of defective hearing in childhood. The sweep-frequency method was recommended, in my statement and with the council's authority, for use by school medical officers in detecting defects of hearing among children which have escaped ascertainment during their pre-school life or have occurred without having been otherwise ascertained after their admission to school.

With financial support from the Medical Research Council, a clinic in which special provision is made for testing hearing in infancy and early childhood was

established by the University of Manchester in this department in 1934. This research unit appears to have been the first of its kind, and the procedures that my wife and I have evolved for testing the hearing of children aged 3 months to 5 years have been reported in the *Journal of Laryngology and Otology* and in our books.

In a recent report on *The Health of the School Child* the chief medical officer of the Ministry of Education has been good enough to refer in some detail, and very favourably, to my wife's work in training health visitors to test the hearing of children at maternity and child-welfare clinics, under the supervision of medical officers. My wife has found health visitors to be very suitable for this work. In the cities of Birmingham, Leicester, and Salford, and in Lancashire, Leicestershire, and Northamptonshire, screening tests have already been begun of the hearing of all children who are brought to maternity and child-welfare clinics. With my wife's help a growing number of health authorities are establishing guidance clinics for the parents of children who have been found to be handicapped by deafness (which is not amenable to medical or surgical treatment) and who have not started school.

A collaborative project, for the further study of deafness in childhood, in which senior members of the staffs of the departments of otolaryngology and education of the deaf, in this university, are taking part, is at present in progress.

Department of Education of the Deaf, The University, Manchester. A. W. G. EWING.

ARTIFICIAL HIBERNATION IN POLIOMYELITIS

SIR,—In your issue of Jan. 15 Dr. Brehme states that in bulbar respiratory paralysis chlorpromazine would, by lowering the basal metabolic rate, decrease oxygen consumption and so lessen the risk of anoxæmia. Although it was at first thought that chlorpromazine decreased oxygen consumption, later work has in fact shown that this drug slightly increases oxygen consumption. For this reason, and to avoid the tachycardia which chlorpromazine produces, I have used 'Hydergine' (which contains the methanesulphonates of the three alkaloids dihydroergocornine, dihydroergocrystine, and dihydroergokryptine in equal proportions) in lieu of the chlorpromazine constituent in the lytic cocktail. Like chlorpromazine, however, hydergine can produce profound hypotension when given intravenously.

Hull. W. N. ROLLASON.

NOTES ON TRANSFUSION

SIR,—"Clinical Pathologist" (Jan. 22) is to be sympathised with in his concern to prevent the wasting of blood that has been cross-matched but then not required, and a more realistic approach to the problem by the Ministry is desired.

In the first place, pathologists and technicians worth the names are capable of breaching sterile containers without admitting infection—that simple procedure is part of their training, and without it no culture of any sort could be put up in the bacteriology department.

In the second place, it is urged that those of us who cross-match blood should stain a film of a sample of each bottle by Gram's method as part of the essential technique. This at once removes any value of a pilot tube as only the blood in the pint bottle matters in the examination for organisms. Thus the bottle must be breached. Why then go to the expense of fitting pilot tubes?

Either a pilot tube to prevent repeated bottle punctures or the staining of a film for bacteria is desirable. Both together are incongruous—and incongruity is what we try to avoid in cross-matching blood!

Macclesfield Hospital. C. A. K. BIRD.

SIR,—Reading through the correspondence in your columns, an onlooker must come to the conclusion, as does Clinical Pathologist in his letter last week, that several important problems would be solved by the universal introduction of pilot tubes.

I have been expecting to see an authoritative letter putting forward the objections to pilot tubes. It has been said that pilot tubes are objectionable because of the danger of switching these tubes either at the donor session or subsequently, and also because the blood inside the main bottle may be infected or damaged while the pilot-tube blood remains unchanged. The fact that the blood in the main bottle was dangerous might thus go undetected at the time of cross-match. These risks would seem to be small, and it would be interesting and helpful if we could learn whether the experts now agree that such risks can reasonably be disregarded.

ANOTHER CLINICAL PATHOLOGIST.

WATER DIURESIS IN PRIMARY MYXŒDEMA

SIR,—Both the recent article by Dr. Hubble (Jan. 1) and the letter from Dr. Fraser and Dr. Garrod [1] suggest that failure of water diuresis is not uncommon in primary myxœdema.

Hubble cites Crispell et al.[2] as supporting this idea. Crispell et al. believe that there is failure of water diuresis in primary myxœdema; but detailed analysis shows that, though most of their patients had a poor diuresis compared with normal people, only 3 cases of the 11 had a failure of water diuresis of the kind seen in adrenal deficiency. Garrod and Gilliland [3] found that in 16 out of 18 patients with primary myxœdema the rate of urine flow and the proportion of ingested dose excreted were very different from the results in 12 out of 13 patients with hypopituitarism. Levy et al.[4] found a normal water diuresis in all 3 cases of primary myxœdema which they studied.

RESULTS OF WATER-DIURESIS TEST (1 LITRE OF WATER INGESTED) IN 9 CASES OF PRIMARY MYXŒDEMA

Case no.	Sex	Ætiology	Max. rate of urine flow (ml. per min.)	Proportion of load excreted	17-Keto-steroid excretion (mg. per 24 hr.)
22	M	Idiopathic	6·8	100% in 3½ hr.	8·1
26	M	Surgical	8·4	86% in 3½ hr.	7·0
30	F	Surgery and X ray	6·0	66% in 4 hr.	4·0
38	F	Surgical	11·0	94% in 4 hr.	4·0
39	M	Idiopathic	3·3	55% in 3¼ hr.	5·7
*40	F	Idiopathic	6·3	84% in 3¾ hr.	3·5
41	F	Idiopathic	6·0	65% in 4 hr.	1·6
42	F	Idiopathic	7·0	100% in 4 hr.	8·7
43	F	Idiopathic	2·5	33% in 3½ hr.	..

* This patient had thyroid extract gr. 1 per day for 3 days before the test.

The accompanying table shows the results of water-diuresis tests in 9 cases of primary myxœdema. The technique used, and the results in cases 22 and 26, have already been reported.[5] In 7 out of the 9 cases the water diuresis was normal. In 1 (case 39) of the 2 failures there was concomitant heart-failure; and, as is well known, patients with heart-failure due to any cause have a failure of water diuresis.

I still believe that the water-diuresis test is very valuable in distinguishing primary myxœdema from myxœdema secondary to hypopituitarism. Rarely patients with primary myxœdema have a failure of water diuresis of the kind seen in hypopituitarism; and in this event cortisone will not produce a normal

1. Fraser, R., Garrod, O. *Lancet*, 1954, ii, 919.
2. Crispell, K. R., Parson, W., Sprinkle, P. *J. clin. Endocrin.* 1954, **14**, 640.
3. Garrod, O., Gilliland, I. C. *Proc. R. Soc. Med.* 1954, **47**, 885.
4. Levy, M. S., Power, M. H., Kepler, E. J. *J. clin. Endocrin.* 1946, **6**, 607.
5. Oleesky, S. *Lancet*, 1953, i, 769.

diuresis, as it usually does in hypopituitarism. Thus when a patient with myxœdema has failure of water diuresis, then pituitary failure must be considered as the possible cause of the myxœdema. This is important, because administration of thyroid alone to a patient with myxœdema secondary to hypopituitarism may occasionally produce an adrenal crisis.

Crumpsall Hospital, Manchester. S. OLEESKY.

CANCER OF THE LARYNX

SIR,—I was interested to read Dr. Maxwell's article last week on the incidence of cancer of the larynx in relation to the incidence of cancer of the bronchi.

I believe he has made a fundamental error in drawing the conclusion "that it is now certain that cancer of the larynx has not increased in frequency during the very period in which cancer of the bronchi and lungs has become very much more common." His conclusion is based on the Registrar-General's figures for deaths from these diseases over a period of years.

Cancer of the larynx is a superficial form of cancer notable for the fact that it reacts favourably to adequate treatment—surgery or irradiation or a combination of both. Every experienced laryngologist has cases which have been followed up for many years and in which there is no recurrence, though the patient may die of some other disease. On the other hand, cancer of the lung in general does not respond to treatment, which is usually barely palliative.

The Registrar-General's figures for deaths from cancer of the lung accurately reflect its incidence; but the figures for deaths from cancer of the larynx relate only to the late or untreated case or the case that has not responded to treatment, and they do not, in my opinion, give a true picture of the extent of cancer of the larynx. I think this disease is probably also on the increase.

Doncaster Royal Infirmary, Doncaster. PHILIP H. BEALES.

INSECTICIDAL LACQUER

SIR,—In your annotation of Oct. 9 you estimated that it would cost £50 to apply insecticidal lacquer to a hospital kitchen and £5 to treat a ward kitchen. You further said that "the lacquer has to be applied by experts; and the cost is high, though perhaps not excessive in view of the long-term benefit."

We regard all these statements as incorrect. In the first place the cost should not be nearly as high as stated above, although, of course, the actual cost will vary according to the size of the kitchen. Secondly, insecticidal lacquer is suitable for use by any energetic person. One gallon contains sufficient to treat 80–100 square yards, and it is not necessary to treat the whole surface, but only to paint strips, 4–6 inches wide, along edges, crevices, and insect haunts.

By the employment of a technical disinfestation service, a hospital committee make use of expert knowledge and experience, as well as qualified operators, and for this they have to pay. In many cases it may be decided that this is well worth the extra expense involved. None the less, we feel that your annotation presented a false picture to your readers, since, where the hospital decides to apply the material with its own personnel, it should be able to cut these costs by at least 50%. Under these circumstances we have no doubt that the use of insecticidal lacquers will be a more attractive proposition to your readers.

METALLURGICAL CHEMISTS LIMITED.

24, Old Broad Street, London, E.C.2.

*** Our estimate for treating a hospital kitchen was obtained from a servicing company, and we understand that the director of the company had in mind a very large kitchen. In such jobs, as in the building industry generally, the cost of skilled labour is often much greater than that of the materials themselves. Our opinion that insecticidal lacquer should be applied by experts was based, first, on the need to mix it, immediately before use, with an accelerator containing 10% sulphuric acid, and secondly on the precautions that have to be taken during application. (For example, in telling people how to use their product 'Kyplaq,' our correspondents say, "Do not inhale vapours. Ensure maximum ventilation. Do not expose naked lights during application or for 3 hrs. afterwards. Wash hands and face with soap and water after applying. Do not overpaint or the actions of the insecticides will be impeded.") Thirdly, the best results will be obtained by someone who knows the haunts of the insects and what kinds of surface are most suitable for treatment.—ED. L.

TOO MANY ANTIPYRETICS?

SIR,—At a time of the year when influenza and acute coryza are all too common, it is pertinent, I think, to inquire again on what grounds the very widespread use of antipyretics is based.

Not only do the public flock to buy many millions of bottles of tablets of various mixtures containing salicylates but the main aim of many practitioners appears to be to promote diaphoresis and to lower that raised body-temperature at all costs—in other words, to get their patients to "sweat it out." Of course most of these mixtures, and the time-honoured Dover's powder are analgesics, but it is the antipyretic side of their action which I maintain is irrational.

On more than one occasion I have allowed my own pyrexia to deal with the invading pathogens and it has coped pretty well. I do indeed endorse the statement[1] that "the reduction of temperature is rarely indicated."

London, S.E.9. N. P. BRONSDON.

ISOBEL CRIPPS CENTRE

Dr. B. Courtenay-Mayers writes:

May I, as medical adviser to this centre, correct the unfortunate impression given by Dr. Barlow (Jan. 15)? Every possible safeguard is being taken by Mr. Neil and his colleagues. I myself have seen many of Mr. Neil's pupils, who have not been under other medical care, and I know that other doctors have too. I have every confidence in Mr. Neil's work, and, provided suitable cases are chosen—i.e., cases where poor posture, malcoördinated movement, or undue tension play a significant part—then very good results can be obtained. I am surprised that Dr. Barlow should confuse Mr. Neil's case with that of the osteopaths: to do so is, to say the least of it, highly misleading.

Dr. Wilfred Barlow writes:

For several years Mr. Neil has carried out an intensive advertising campaign in the national press. In several of these advertisements he cites medical conditions—e.g., "a method of proved value in many states of physical ill-health and psychological disorder." One advertisement tells people to "Ask Your Doctor" about his school, and this to the layman might easily imply general medical support. It seems to me meaningless to talk about being ethical after one has advertised in this way, however zealous one may then be in contacting the doctors whose patients have come as a result of the advertising. The fact that Mr. Neil has his own medical adviser to whom he refers those who are "ill or suspected of illness" still leaves the onus of "suspecting" or "not-suspecting" on him.

There is nothing to prevent individual doctors from investigating a heterodoxy, but if general medical coöperation is sought for it, I still think that it would be wiser to insist on the safeguards which are given, say, by physiotherapists who do not advertise.

1. Douthwaite, A. H. Hale-White's Materia Medica, Pharmacology and Therapeutics. London, 1952.

Obituary

HAROLD KIRK WALLER

M.B. Camb., F.R.C.O.G.

Dr. Harold Waller possessed in full measure the qualities that become a doctor. Courteous, gentle, witty, and humble, he had a scholar's wide culture and persistently inquiring mind; and he was a trusted friend to many. In particular his perceptive understanding of women was the basis of his special contributions to medicine—his work for the better training of health visitors and midwives and for the education of mothers, and his detailed studies of the processes of breast-feeding. He could not have achieved so much without a constancy of purpose amounting to a vocation, yet he never allowed this to obtrude. His enthusiasm was tireless, but his persuasion rested on no stronger phrases than a quiet "I think it so important."

[Elliott & Fry

He was born in 1881, the youngest but one in a family of sisters. His father, the Rev. Horace Waller, had worked in Central Africa with David Livingstone, shared in the anti-slavery movement, and was an intimate friend of General Gordon: he died when his son was 15. He was educated at Charterhouse School, Trinity College, Cambridge, and University College Hospital, London. On qualifying in 1909 he became house-physician to John Rose Bradford and Batty Shaw. Later, while serving as R.M.O. at Queen Charlotte's Hospital, he started with a colleague the first child-welfare clinic. In 1911 he was appointed R.M.O. at the East London Hospital for Children, Shadwell, where he worked under Eustace Smith, J. A. Coutts, Morley Fletcher, and also Wilfred Trotter to whose influence he often paid tribute.

During his time at Shadwell an epidemic of gastro-enteritis overwhelmed the hospital. There were more than 3000 cases: some cots were even occupied by three dying babies within a day. The most up-to-date treatment then consisted in little more than trying to maintain fluids by subcutaneous injections of saline, and a baby's chance of survival depended mostly on successful breast-feeding and on the mother's knowledge of hygiene. After that saddening experience, whatever his other activities, Waller's first concern was always the technical details which make breast-feeding possible, and the spread of knowledge about child care.

In 1912 he settled in Chelsea, and his large practice was soon chiefly among mothers and children. But he also found time to acquire experience of infant welfare under Eric Pritchard who was already urging the need for preventive work among the poorer mothers. When, in 1914, the Royal College of St. Katharine, in Poplar, became a training-school for the first health visitors and a welfare centre equipped with clinics and a few beds, Waller was appointed superintendent medical officer. Except for his war service with an ambulance unit, he remained on the staff until 1948. There he taught the health visitors and with others started ante-natal clinics, the first dental clinics for children, facilities for tonsillectomy, and a ward for infants who were not thriving. A garden for sunlight treatment and an artificial-sunlight clinic for the treatment of rickets were added in 1921.

In 1912 he heard of the work of Mrs. Lelia Parnell, Miss Alice Gregory, and Miss Maud Cashmore, who founded the British Hospital for Mothers and Babies at Woolwich. Their ideals of better training for midwives and better supervision of the expectant mother appealed to him and he joined them as physician and lecturer to the nurses. Thus began an association which lasted until his death. Through it the small unknown hospital in a poor inaccessible district won a reputation throughout the world for the excellence of its care, the training of its midwives, and the original investigations carried out.

For many years his work was thus divided between Poplar, Woolwich, and Chelsea where his practice also included many confinements. He was a highly skilled obstetrician and has been called the "first of the general practitioner obstetricians." In 1927 when the Chelsea Babies' Club was formed he became its medical adviser, and from his skill and gentle wisdom has come much of its success. But his interest was more and more deflected to child welfare and he gave up his practice in 1933 to give more of his time to research on breast-feeding. To this end he received a grant from the Goldsmith's Company.

At Woolwich Waller was able to test his methods of management in breast-feeding. He had already come to the conclusion that the natural process, if left unaided, failed about a third of the babies as a source of food. The failure was commonly attributed to the ineffectiveness of the baby's suction. But he questioned "whether we are always right to place on the child the whole onus of withdrawing the milk." He noticed how often failure of secretion followed engorgement and sought to prevent it by antenatal expression of viscous colostrum, postnatal expression to avoid overfilling, the administration of stilbœstrol to reduce tension within the gland, and the use of a simple appliance to improve the shape of poorly formed breasts and nipples. He taught the importance of the baby's position at the breast and the unending vigilance needed to combat soreness of the nipples. He was the first doctor to describe the draught reflex and to draw attention to its importance. It is difficult, now that his methods have become widely established and much of his work is common knowledge, to appreciate the wealth of patient original clinical observation on which it rested. His book, *Clinical Studies in Lactation*, when it was published in 1937, seemed to have no word in common with previous teaching, but to women who had fed their babies from the breast it rang with truth.

Most of his work related to breast-feeding, but not all. For instance, in the '20s while working at Poplar he used to sit about in dockers' homes to see what their babies had to eat, because dockers were so powerfully built. He found that their diet included steak, tripe, and pigs' trotters and he came to recommend a liberal and high-protein diet for weanlings far in advance of the practice of the time. He always kept in touch with the home background of his patients, and during the late war he used to visit old people in their shelters and homes in Poplar during the bombing to persuade them to be evacuated. During raids on Woolwich he accompanied the midwives on their visits to allay fear.

He was fortunate in being able to convey his findings not only in scientific journals and books, but also by talks, for he was a gifted teacher. He had grace in speaking and writing which lightly and easily compelled attention. He taught by relating examples which were memorable because of their humanity. The listener's emotions were gripped and yet there was never the slightest trace of sentimentality: an emotional attitude to breast-feeding, so easily assumed, embarrassed him. He was among the first to see the possibilities of broadcasting as a means of educating mothers in child health and he availed himself of it from the early '30s. His broadcasts were so vivid that many of his listeners had the feeling that he held a real baby in his arms as he spoke.

In the past decade his views had won wide recognition. He was invited to lecture in America and New Zealand, but ill health prevented his accepting. He was, however, able to go to Paris to address an international gathering in 1953. The same year he was elected F.R.C.O.G. He also received the Dawson Williams prize. On his retirement a fund was raised, primarily by the nurses of the British Hospital for Mothers and Babies, to build, as a tribute to him, bed sitting-rooms for the aftercare of mothers and babies. Though the building is not yet complete he saw it begun and took delight in hearing of its progress. He died at Wadhurst on Jan. 15.

A. G. H. writes:

"I met Harold Waller for the first time at Shadwell in 1911, the year of the great epidemic of gastro-enteritis. During the summer and autumn 3118 cases were treated at the hospital. The appalling mortality affected him profoundly

and, I believe, determined him to devote the greater part of his professional life to the care of children. Time meant little to him when he was dealing with anxious cases, and it was typical of him that he would often awake to the fact that he had stayed late at the clinic and that there were appointments to keep him busy in his general practice until midnight or later. He had built an extensive general practice, but this did not entirely satisfy him for his heart was in the problems of infant welfare to which he gave all his energy when he abandoned his private work in 1933.

"During the past fifteen years his health was a constant handicap, but he never complained and refused to let it interrupt his work. His keenness was infectious and he was beloved by colleagues and patients. His characteristics were courage, kindness, humility, and a great capacity for friendship—a handsome gentleman in every sense of the word."

Another old friend, F. C. N., describes him as "a man who, though he held strong views, never pushed them at you."

"He was glad to see others researching along the same lines as himself and never assumed the title of leader, although in fact he was this to many of us. Though he was reserved and often appeared distant he was not pompous; he had an endearing knack of being able to laugh at himself. Quite recently he wrote to a friend who had been ill and said 'Adopt the attitude of the oriental and sit contemplating nothing. In childhood this is impossible but in old age it is so seductive it is mistaken for dignity.'"

JOHN DUNCAN WHITE

M.B. Edin., D.M.R.E.

Dr. Duncan White, who retired last year from his appointment as radiologist to Hammersmith Hospital and senior lecturer in radiology at the Postgraduate Medical School of London, died on Jan. 21 after a long illness largely due to his work. He was 59 years of age.

He graduated M.B. in the University of Edinburgh in 1917 and held house-appointments at Edinburgh Royal Infirmary and the Mansfield and District Hospital. On his return to civilian practice after service with the R.A.M.C. he decided to specialise in radiology, and he took the D.M.R.E. in 1921. He was for a time an assistant radiologist at St. George's Hospital, London; he was appointed to the staff of St. Giles' Hospital and of the Hospital of St. John and St. Elizabeth in 1924, and of the Hospital for Tropical Diseases in 1927; and in the early '20s he also joined the teaching staff of the British Institute of Radiology. In 1930 he returned to Edinburgh as director of the department of radiology at the Royal Infirmary; but after four years there he was chosen to be the first director of the department of radiodiagnosis at Hammersmith Hospital, joining the Postgraduate Medical School of London as lecturer in radiology. He also became senior adviser in radiology to the London County Council, a post which he held until the start of the National Health Service in 1948. He continued to serve the Institute of Radiology as a member of its council, and in 1935 he was its president. His enthusiasm in the teaching of radiographic techniques had early brought him into contact with the Society of Radiographers, and his critical and constructive interest in the society's activities was maintained after his return to London.

In 1942 he was released from his duties at Hammersmith Hospital to take charge of the training of personnel for mass miniature radiography in the Army. In 1953 he was appointed O.B.E. and the following year he retired.

In a personal tribute J. F. B. writes:

"Though Duncan White taught and showed the highest standards of radiology to his students, radiographers, and radiologists he did not consider the production of a spectacular radiograph his goal, but merely a means to help the patient. His integrity, enthusiasm, and desire to render to his patients the utmost service radiology could give unfortunately resulted in severe radiation burns which necessitated several amputations. These ominous signs, though associated with much pain, were borne silently with great fortitude."

R. E. S. writes:

"Dr. Duncan White was a man of infinite courage—both physical and moral. His encouragement and support can only be appreciated by those who were closely associated with him. He was a man of varied interests, with a phenomenal memory for detail in connection with his work, a charming host, and a most amusing conversationalist—qualities which were greatly appreciated by his many friends. Not only in England, but also in the Dominions, there are many radiologists holding posts of responsibility who owe a great deal to his foresight and teaching.

"In his marriage to Mrs. Clare Wigfull eighteen months ago he found great happiness, and she proved a constant and devoted companion to him during his long illness."

JAMES BLAKELY MILLER

M.D., LL.D. Glasg., D.P.H., J.P.

Dr. J. B. Miller, who died on Jan. 14 at the age of 77, was chairman of the Representative Body of the British Medical Association from 1946 to 1948. His years of office were arduous and eventful. They covered the passage through Parliament of the National Health Service Act and the long negotiations between the Ministry of Health and the medical profession before the service was set up. The seven meetings of representatives over which he presided during these critical times gave full scope to his skill as a chairman.

He was born at Kirkintilloch, Dunbartonshire, the son of the Rev. Andrew Miller. He was educated at Glasgow High School and Glasgow University, where he graduated M.B. with commendation in 1898. After serving as senior assistant at Town's Hospital, Glasgow, he settled in general practice at Bishopbriggs, a mining and agricultural town near Glasgow. In 1905 he became M.D., again with commendation. He was also M.O.H. for the neighbouring burghs of Kirkintilloch and Kilsyth, and in 1909 he took the D.P.H. As a citizen, as well as a doctor, he took a full part in the life of the community, and his many honorary appointments ranged from justice of the peace for Lanarkshire to the trusteeship of the Cadder and District Miners' and Community Welfare. Since 1922 he had been actively associated with the work of the B.M.A. and in 1929 he was elected to the council. Since then he has served on many of the Association's committees, notably those concerned with public health, industrial medicine, and medical planning. In 1951 he was elected a vice-president of the Association.

When, in 1951, he completed fifty years' practice his friends and patients made a public presentation to him. Last year when the B.M.A. met in Glasgow the honorary degree of LL.D. was conferred on him by the university in recognition of his mastery of the "difficult art of general practice."

A. T. R. recalls that none of the seven Representative Meetings over which Miller presided was an easy one.

"With the National Health Service looming ahead, representatives came eager to add the protestations of their divisions to the doubts and discontents of the day. Miller's experienced chairmanship, his sense of the meeting, and his patience and never failing humour stood him, and the Representative Body, in good stead. Refusing to be hurried, giving every speaker his due hearing, yet always alert for the moment when debate could give place to decision, he guided the meetings calmly and imperturbably. All of us in the Representative Body were his friends. We missed him, when, his chairmanship over, his regular visits to London ended, and it was a real pleasure to see him again at the Glasgow meeting last year. Though we found him frail, he was as alert and witty as ever, and obviously derived great pleasure from meeting so many of his former colleagues. At the graduation when he received his well-earned honorary degree he was aptly described as 'a physician who personifies those virtues which have made the Scots doctor a revered figure throughout the world.' Certainly J. B. was revered and loved by all who knew him and worked with him."

Dr. Miller married Margaret Vaughan, daughter of the Rev. I. B. A. Watt. She survives him with a son and two daughters. Dr. Andrew Miller and Dr. Marjory Miller continue their father's practice.

CECIL GORDON ROBERTS

B.A., M.D. Camb.

Dr. C. G. Roberts, deputy Treasury medical adviser, died on Sept. 8, at the age of 48, at Tamworth in Australia while on holiday with his wife.

He was educated at Uppingham and at Emmanuel College, Cambridge. In 1927 he took the natural sciences tripos, part II, in physiology, a training which later coloured his approach to the problems in industrial medicine. He continued his medical studies at the Westminster Hospital. He qualified in 1930 and after holding house-appointments he became resident medical officer at the Westminster. Later he was for a time resident physician at Ruthin Castle.

In 1934 he joined the medical staff of the General Post Office under Sir Henry Bashford, who was then chief medical officer. During the war years his clinical ability, cheerfulness, and optimism did much to maintain the morale of the staff at headquarters, who were then entitled to medical attention under the old Post Office medical service. He trained many hundreds in first-aid and he was unstinting in giving of his time to the many charitable and social activities of the Post Office. He interpreted the responsibilities of medicine widely, and he had remarkable success in getting the idea across that medicine was concerned with every aspect of the well-being of the workers in industry. In 1943 he was promoted second medical officer and two years later chief medical officer. When the Government medical services were reorganised in 1948 he became deputy Treasury medical adviser. His influence during this difficult transitional period was great, and to a large extent the smoothness of this transfer was due to his coöperation.

About a year ago he decided to emigrate to Australia. He was attracted by the scope of industrial health work there and he wished to give his two sons opportunities in a new country. During his last few years at the Treasury he initiated many changes, and he was consulted by many doctors on industrial medical problems. One of them, J. N. M., writes:

"When the Social Medicine Research Unit decided several years ago to set up epidemiological studies on coronary artery disease, Roberts was one of the first to whom we turned for advice and help. He was immediately generous with both; and thereafter, until he left for Australia, we studied together the experience of postmen and other grades in the vast organisation he served. He was a delightful man to work with—warm, enthusiastic, and full of ideas. He had an unusual breadth of interest, and a rich fund of stories about the people for whom he was caring. At the same time he was actively concerned with mass statistics and with problems of large-scale administration. His physiological training gave him insight into the "human engineering" aspects of his job; his psychological interests led to useful contributions, both theoretical and practical, on health and morale in relation to the size of working groups. He thought with great clarity on topical questions of industrial medicine—on political developments that came from the National Health Service and the growing concern of trade unions with health matters, and, particularly, about current advances in the human side of industry, in welfare, personnel services, and the human relations' movement. At a time when industrial medicine is having difficulty in finding its place in the new order of things his counsel will be sorely missed."

Diary of the Week

JAN. 30 TO FEB. 5

Tuesday, 1st

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Dr. E. F. Gale: Actions of Antibiotics on Bacteria.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Mr. Aleck Bourne: Functional Uterine Hæmorrhage.

Wednesday, 2nd

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
6 P.M. Prof. M. Arslan (Padua): Effects of Ultrasonic Waves on the Ear.

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. J. O. Oliver: Bacteriology of Skin Diseases.

INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Dr. J. G. Scadding: Investigation of Respiratory Illness.

BIRMINGHAM MEDICAL INSTITUTE, 154, Great Charles Street, Birmingham, 3
8.15 P.M. Mr. A. Ruscoe Clarke: Blood-loss and Blood-transfusion in Civilian Trauma.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. (Medical School.) Prof. John Glaister: Some Medico-legal Trifles.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH
8.30 P.M. (Royal College of Surgeons, 18, Nicolson Street, Edinburgh.) Dr. G. A. Grant Peterkin: Place of Dermatology in Medicine.

Thursday, 3rd

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5.30 P.M. Sir Gordon Gordon-Taylor: Swellings of the Neck and their Management.

ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Prof. Charles Rob: Preservation and Transplantation of Human Blood-vessels.

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Prof. P. B. Medawar, F.R.S.: Tissue Transplantation Immunity.

INSTITUTE OF PSYCHIATRY, Maudsley Hospital, Denmark Hill, S.E.5
5 P.M. Prof. H. J. Eysenck: Psychology and the Foundations of Psychiatry.

NUFFIELD ORTHOPÆDIC CENTRE, Wingfield-Morris Orthopædic Hospital, Oxford
8.30 P.M. Dr. E. G. L. Bywaters: Natural History of Rheumatoid Arthritis.

LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
8 P.M. Dr. V. K. Summers: Syndrome of Hypothyroidism.

UNIVERSITY OF ST. ANDREWS, Medical School, Small's Wynd, Dundee
5 P.M. Dr. T. Anderson: Unwanted Effects of Chemotherapy.

Friday, 4th

UNIVERSITY OF LONDON
6.30 P.M. (London School of Hygiene and Tropical Medicine.) Dr. J. A. Scott: Health.

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Prof. R. E. Tunbridge: Disorders of Connective Tissue.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
10.30 A.M. *Otology.* Mr. J. W. S. Lindahl, Dr. Ralston Paterson: Malignant Disease of the Middle Ear and Meatus.
2.30 P.M. *Laryngology.* Dr. W. Brockbank, Dr. Kate Maunsell, Mr. J. C. Hogg: Relation of Nasal Disease to Asthma.
5.30 P.M. *Anæsthetics.* Dr. J. E. Hall: Respiratory Physiology in Infants and Young Children.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. P. J. Hare: Clinical demonstration.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow
5 P.M. Mr. J. Sloan M. Robertson: Paralysis as a Surgical Problem.

Appointments

DAVIES, R. G., M.D. Lond., D.P.H.: deputy M.O.H. and deputy principal school M.O., Kingston-upon-Hull, and deputy M.O.H. and medical inspector of aliens, Hull and Goole port health authority.

DEEGAN, JOHN, M.B. Durh.: school M.O., Northumberland.

GOWANS, J. A., L.R.C.P.E.: senior casualty officer, Wansbeck H.M.C.

HENDRIE, MARGARET I., M.D. Lond., D.P.H., D.C.H., D.OBST.: senior M.O. (maternity and child welfare), Kingston-upon-Hull.

KELSALL, P. D., M.B. Manc., F.F.A. R.C.S., D.A.: consultant anæsthetist, Southport, Ormskirk, and North Liverpool area.

LEDERER, JOSEF, M.R.C.S., D.A.: consultant anæsthetist, North West Durham H.M.C.

LOCKHART-MUMMERY, H. E., M.A., M.CHIR. Camb., F.R.C.S.: honorary surgeon (consultant status), Italian Hospital, London.

MATTHEWS, R. A., M.B. Lond.: school M.O., Northumberland.

MOYNAGH, D. W., M.B. Lond., D.P.M.: whole-time senior asst. psychiatrist, Mapperley Hospital, Nottingham.

O'REILLY, JOHN, D.M. Oxfd, M.R.C.P.: honorary consulting physician, children's department, Hospital of St. John and St. Elizabeth, London.

ROADS, P. G., M.D. Lond., D.P.H.: deputy M.O.H., Sheffield.

East Anglian Regional Hospital Board:

FOSTER-SMITH, G. C., M.R.C.S., D.A.: asst. anæsthetist, Norfolk and Norwich hospital group.

TAGART, R. E. B., M.CH. Oxfd, F.R.C.S.: consultant surgeon, Newmarket General Hospital.

THOMPSON, J. R., M.CHIR. Camb., F.R.C.S.: consultant surgeon, Peterborough and Stamford hospital group.

Appointed Factory Doctors:

BALLANCE, G. A., M.B. Camb.: Knighton, Radnor.
SHEARER, J. A. W., M.B. Edin.: Newtown, Montgomery
WILLIAMS, R. D., M.B. Camb.: Stevenage, Hertford.

Notes and News

WORLD HEALTH ORGANISATION

THE fifteenth session of the Executive Board of W.H.O. opened in Geneva on Jan. 18, under the chairmanship of Dr. Henry van Zile Hyde (U.S.A.). It was announced that in the past few months the Organisation had set up a network of poliomyelitis research laboratories, which would shortly be extended. These laboratories would study and identify local strains of the viruses of poliomyelitis and of similar diseases—in particular those of encephalomyelitis.

The board adopted a resolution to give first priority in the field of public health to the promotion of research into the effects of radioactivity. Dr. M. G. Candau, director-general of W.H.O., said that early planning was needed if the dangers implicit in the increasing application of atomic energy to industry were to be avoided. The W.H.O. programme was expected to include the collection and dissemination of information on the medical and biological aspects of atomic energy, and the training of personnel in methods of protection.

NEW SCHEME FOR JUNIOR HOSPITAL STAFF

THE Oxford Regional Hospital Board is introducing into some of its hospitals a scheme designed to meet the needs of young doctors who, on completion of their National Service, desire to extend their experience before entering general practice or being selected for training as specialists. Many of these young doctors are married and find themselves unable for financial and other reasons, to take up short-tenure posts in the hospital service.

The scheme provides for the creation of a limited number of rotating intern posts in the salary grade of junior hospital medical officer (£775 × £50 to £1075), to take the place of existing posts on the junior hospital staff. They will be tenable for 2–4 years and will be held in the Reading and Northampton groups of hospitals (four posts in each group). Every effort will be made to provide accommodation for married doctors in or near the hospitals at an economical charge.

Holders of these posts will be expected to serve for approximately 6 months in each of the major departments of the hospital (medicine, surgery, pædiatrics, and obstetrics) and to assist in the other departments as circumstances in the day-to-day running of the hospitals may require.

It is thought likely that most of those holding these posts for 2 or more years will elect to enter general practice, and that a minority will wish to train as specialists in branches of medicine to which they are specially attracted or for which they have a special aptitude. The latter (if selected by their consultant) will have the opportunity to take up posts in the special departments of their own or other hospitals in the region, retaining the salary increments in their grade.

The regional committee of the executive councils has expressed its interest in this project and willingness to cooperate in facilitating the entry into general practice of doctors trained under the scheme.

LOIASIS

AT a meeting of the Royal Society of Tropical Medicine and Hygiene in London on Jan. 20 members of the staff of the Liverpool School of Tropical Medicine and their colleagues working under the Colonial Medical Research Committee described researches on loiasis in the British Cameroons.

Prof. R. M. GORDON showed that various species of chrysops have been confirmed as actual or potential vectors; that chrysops infected from man can transmit the infection to certain monkeys; that the infection is widespread in the population of many rural areas of West Africa, though the observed incidence is often less than would be expected from a study of the biting habits, and the infection-rates, of the vectors; and that as yet we do not know enough of the natural history of this disease, and particularly of the extent and importance of monkey reservoirs, to institute large and expensive schemes of control.

This last point is implicit in the study of chrysops species, their distribution and breeding, reported by Mr. W. CREWE and Mr. H. OLDROYD. *C. silacea* is the vector par excellence in the Kumba area, because its behaviour allows the requisite contact with man. Chrysops seems to be a genus of savannah woodland, from which a few species have migrated to the forest fringe. Dr. B. O. L. DUKE has observed that *C. silacea* is attracted to wood smoke; it bites through most of the daylight hours and therefore has a maximal chance of picking up the microfilariæ of *Loa loa*, which shows the well-known diurnal periodicity of this species. But loiasis in mandrills infected with adult *L. loa* taken from a naturally infected mandrill showed nocturnal periodicity; so far no essential difference has been found between human and monkey strains.

Prof. J. J. C. BUCKLEY discussed the general features of development and ecdysis of microfilariæ in insect hosts, and Dr. FRANK HAWKING filarial periodicity. He has in previous work shown that periodic microfilariæ seek the capillaries of the lungs at certain hours of the day, this probably being the optimum site for them.

Dr. W. E. KERSHAW has studied the epidemiology of this infection in the rain forest, its abrupt fringe, the mountain grassland, and coastal areas, taking into consideration the population and its distribution in urban and plantation areas. His empirical approach to these problems was supplemented by an analytical approach of great interest, in which a mathematical model was constructed on the basis of the factors involved.

In the discussion Sir GEORGE MCROBERT referred to the psychological effect of this infection in European residents of the endemic area, and to the fact that the pathological effects of these migratory adult worms are little understood. Prof. A. W. WOODRUFF spoke of the importance of exact diagnosis, since the value of diethylcarbamazine can be seriously underrated if wrongly given in non-specific allergic states. Apart from the finding of microfilariæ (in which recent concentration techniques are valuable), eosinophilia, the complement-fixation test, and a recent history of Calabar swellings are important pointers. Diethylcarbamazine can eradicate even long-standing infections.

RESEARCH IN CEREBRAL PALSY

THE Nuffield Foundation is financing a five-year programme of research at Frenchay Hospital, Bristol, into the neuropathology of cerebral palsy and mental defect. This grant will enlarge the scope of the work already being carried out by the Burden Mental Research Department of the South Western Regional Hospital Board. The Burden Research Committee, under the chairmanship of Dr. J. G. Greenfield, has been responsible for long-term investigations into mental deficiency; and the neuropathological side of these researches has been under the direction of Dr. R. M. Norman, lecturer in neuropathology at the University of Bristol, who has recently been given a full-time research appointment by the board.

A new laboratory is now being equipped and Dr. H. Urich, a lecturer in the department of pathology of the university, has been appointed to assist Dr. Norman. The work will be undertaken in cooperation with the departments of pathology and child health of the university. Its main purpose is to examine the brains of patients who have suffered from cerebral palsy and whose early history and clinical condition have been adequately recorded. There are at present few detailed studies of both clinical and pathological data, and for this reason much uncertainty exists as to the part played by birth injury in the pathogenesis of cerebral palsy.

The new research team will have access, as in the past, to cases from the local hospitals, but it is hoped that, when the new laboratory is in operation, clinicians and pathologists from other regions who have suitable material will use the facilities at Frenchay for the detailed examination of the nervous system.

BACTERIA IN INDUSTRY

EVEN among culture collections there is increasing specialisation, and several new ones were created in 1950 on the decentralisation of the Medical Research Council's National Collection of Type Cultures. One of these, the National Collection of Industrial Bacteria, has just published a catalogue[1] of bacteria primarily of interest to industrialists; but this catalogue also contains two lists of wider interest. The first is a list of compounds produced by different micro-organisms maintained in the Collection—e.g., acetone is produced by three strains of *Clostridium acetobutylicum*, and penicillinase by two strains of *Bacillus licheniformis* and by one of *B. subtilis*. The second is a list of strains used for microbiological assays; folic acid can be assayed either by *Lactobacillus casei* NCIB 8010 or by *Streptococcus fæcalis* NCIB 8123.

1. The National Collection of Industrial Bacteria, Catalogue of Strains. H.M. Stationery Office. Pp. 32. 2s.

THE ELDERLY WORKER

IN his third report [1] on the later working life in the building industry (part of the Nuffield Foundation's inquiry into the needs of old people), Mr. F. Le Gros Clark assesses the extent to which special use is made of older employees. Most firms which he questioned agreed that older workers should relinquish constructional work for less arduous duties of maintenance and repair. Few favoured grouping elderly employees in separate gangs, since young workers learn much from their older colleagues, who in turn obtain considerable assistance from their stronger and more agile juniors. Mr. Le Gros Clark concludes that the building industry will be able to employ an increasing proportion of elderly craftsmen, provided always that careful attention is paid to finding them work of a suitable nature.

University of London

Dr. Otto Klineberg, of the Department of Social Sciences, UNESCO, and professor of psychology at Columbia University, is to deliver two lectures, on Feb. 14 and 15. The first is entitled Psychology and International Relations, and the second Uses and Limitations of the Experimental Method in Social Psychology. Both lectures will be given at 5.30 P.M., at the Senate House, W.C.1.

University of Birmingham

Dr. W. Mayer-Gross, part-time consultant psychiatrist at Uffculme Hospital, has been appointed senior fellow in the department of experimental psychiatry. Dr. Mayer-Gross was formerly director of clinical research and consultant psychiatrist at Crichton Royal Mental Hospital, Dumfries. Dr. K. H. Ginzel has been appointed senior research fellow in neuropharmacology, and Dr. P. B. Bradley lecturer in electrophysiology, in the department. Dr. J. Williams has been appointed lecturer in anatomy.

Royal College of Physicians of London

On Tuesday and Thursday, Feb. 8 and 10, Dr. J. A. Smiley will deliver the Milroy lectures, on Personal Factors in Accident Proneness. Both lectures will be given at the College, Pall Mall East, S.W.1, at 5 P.M.

Society of Apothecaries of London

At recent examinations the following were successful:

M.M.S.A.—A. P. Cautilleri, S. Miller.
L.M.S.S.A.—R. N. Wade, P. M. Gurring, P. Jago, F. R. F. Dibb, T. Freüchen, A. P. Brown, E. A. Capell, D. A. Bennett, J. E. Todd, J. A. Bradford.
D.I.H.—Z. Khan, W. H. Suffield.

North of England Obstetrical and Gynæcological Society

The following officers have been elected for this society for 1955:

President, Mr. H. J. Malkin; hon. treasurer, Mr. C. H. Walsh; hon. general secretary, Mr. J. B. Cochrane; hon. reporting secretary, Miss U. M. Lister.

British Association of Plastic Surgeons

The following officers and council have been elected for 1955:

President, Prof. T. Pomfret Kilner; hon. treasurer, Mr. R. P. Osborne; hon. secretary, Mr. J. P. Reidy; council, Mr. J. N. Barron, Mr. W. Hynes, Mr. P. H. Jayes, Mr. D. N. Matthews, Mr. Rainsford Mowlem, Mr. Mortimer Shaw, Mr. J. S. Tough, Mr. A. B. Wallace.

College of General Practitioners in Scotland

The Scottish council of the college was constituted at a meeting held in Edinburgh on Jan. 13. Dr. J. M. Henderson (Pitlochry) was appointed chairman, Dr. Lowell Lamont (Edinburgh), vice-chairman, and Dr. Richard Scott (Edinburgh), hon. secretary and treasurer. Other members of the Council are:

D. Peebles Brown (Kilmalcolm), Mary Esslemont (Aberdeen), C. M. Fleming (Edinburgh), W. W. Fulton (Glasgow), W. S. Gardner (Glasgow), I. D. Grant (Glasgow), G. W. Ireland (Pathhead), K. A. Mackay (Laggan), T. S. McDonald (Glasgow), J. G. Munro (Beauly), David Myles (Forfar), R. A. B. Rorie (Dundee), C. S. Sandeman (Durness), J. A. Shearer (Bucksburn), J. M. Stalker (Dundee), and George Swapp (Aberdeen).

The Scottish office of the College is at Livingstone House, 39, Cowgate, Edinburgh, 1.

1. Ageing Men in the Labour Force. The Problems of Organising Older Workers in the Building Industry. By F. LE GROS CLARK, M.A. Obtainable from the Nuffield Foundation, Nuffield Lodge Regent's Park, London, N.W.1. 1955. Pp. 18.

Course on Child and Family Psychiatry

The department of child psychiatry of Ipswich hospital group is holding a refresher course on this subject from March 28 to April 1. Further particulars may be had from the Child Psychiatry Clinic, 11, Fore Street, Ipswich.

International Symposium on Cardiovascular Surgery

A symposium on Cardiovascular Surgery: Recent Studies in Physiology, Diagnosis, and Techniques is to be held in Detroit on March 17–19. Inquiries should be addressed to the secretary of the symposium, Henry Ford Hospital, Detroit 2, Michigan, U.S.A.

Royal Institute of Public Administration

This institute is to hold a conference, under the chairmanship of Dr. May Baird, at Peebles from March 31 to April 2, on the National Health Service. The theme of the conference is to be Working Together—Progress and Prospects. The opening speaker will be Sir Humphrey Broun Lindsay, chairman of the South-Eastern Regional Hospital Board, and other speakers will include Dr. J. O. McDonagh, president of the Scottish Association of Executive Councils, Dr. John Jardine, chairman of the General Board of Control, and Dr. M. M. Whittet, physician-superintendent of Craig Dunain Hospital, Inverness. Further particulars may be had from the hon. secretary of the Edinburgh and East of Scotland regional group of the institute, 245, High Street, Edinburgh.

Lady Tata Trust

The trustees of this fund invite applications for grants, scholarships, or fellowships for research on diseases of the blood, with special reference to leukæmia. In view of the affinity between leukæmia and other forms of neoplastic disease, candidates who wish to undertake research on any aspect of malignant disease which may throw incidental light on problems of leukæmia will be eligible.

Grants are made for research expenses or to provide scientific or technical assistants for senior workers. Scholarships (at the rate of £600 per annum) are awarded for the personal remuneration of workers carrying out approved research under suitable direction. In addition, the trustees may award one or more fellowships (£1000 p.a.) to workers with considerable research experience. Further particulars may be had from the secretary of the scientific advisory committee, c/o Medical Research Council, 38, Old Queen Street, London, S.W.1. Applications must be submitted before March 31.

Dinner to Dr. W. E. Lloyd

On Jan. 15 Dr. Lloyd's former house-physicians at the Westminster Hospital and the Brompton Hospital gave their Chief a dinner. Despite bad weather 45 gathered in London from all over the country. The occasion was prompted, not by any special anniversary, but by the hosts' wish to express their "affectionate regard for the most wise and kindly of physicians." Dr. Lloyd included in his list of ideal qualities for a houseman—loyalty, enthusiasm, and a calm sympathetic understanding of human nature (including the Chief's). All these found expression in speeches extolling the fatherly figure known throughout his hospitals as "Ernie."

NP 13.—Messrs. Nicholas Products Laboratories, Slough, Bucks, inform us that the NP 13 ('Megimide') used by Dr. Harris (Jan. 22, p. 181) and other workers was supplied by Nicholas Proprietary Ltd., Melbourne. Within a few weeks, Nicholas Products Laboratories hope to have adequate supplies of this drug for clinical trial.

Guida Villit.—This 800-page illustrated guide to Italian holiday resorts includes a list of spas and the medical conditions for which they are recommended. It is issued by Ufficio Stampa Medica Italiana, Via Budua 13, Milan.

CORRIGENDA: *A Barbiturate Antagonist.*—In this article last week by Dr. T. A. B. Harris (p. 181) the reference to a report by F. H. Shaw and his colleagues (1954) should have read: *Nature, Lond.* **174**, 402.

Gloucestershire County Council.—The council is inviting applications for the appointment of deputy county medical officer of health and deputy principal *school* medical officer. In the previous two issues the word "school" was omitted. The notice appears correctly in this issue.

Births, Marriages, and Deaths

BIRTHS

LEVINSON.—On Jan. 21, at the London Clinic, to Dr. Frances Levinson (née Dove), wife of Ellis Levinson—a daughter.
TAYLOR.—On Jan. 15, at Godalming, to Phyllis (née Plumbridge), wife of Dr. W. K. Taylor—a son.
WRIGHT.—On Jan. 19, at 64, Redbrink Crescent, Barry Island, to Sheila (née Smith), wife of Dr. Martin Wright—a son.

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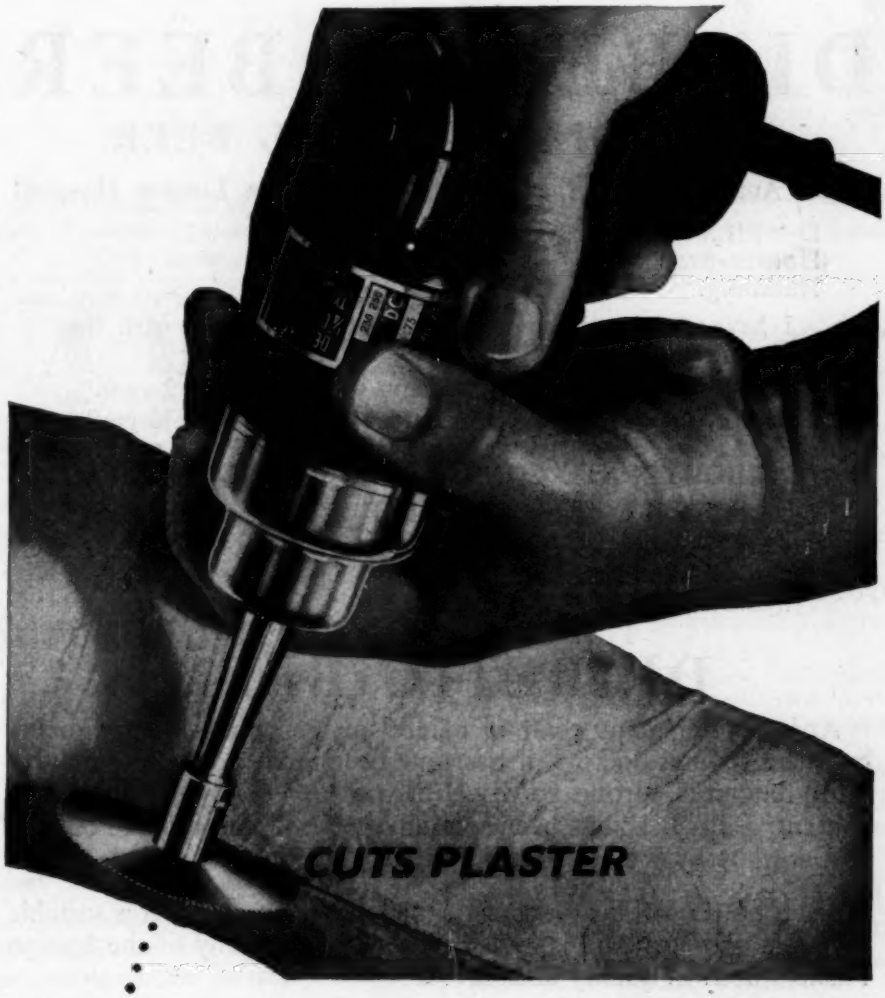

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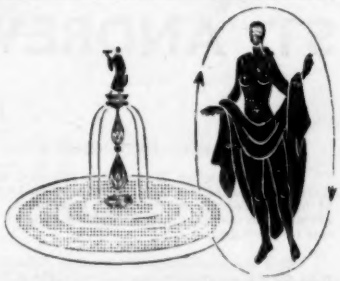

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Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

JAMES ANDERSON SMILEY, Esq., O.B.E., M.D., will deliver the MILROY LECTURES on TUESDAY, 8TH FEBRUARY and THURSDAY, 10TH FEBRUARY, 1955, at 5 P.M. at the College, Pall Mall East, S.W.1.

Subject: "Personal Factors in Accident Proneness."

Any member of the medical profession admitted on presentation of card.

By order of the President,
HAROLD BOLDERO, Registrar.

UNIVERSITY OF LONDON

INSTITUTE OF ORTHOPÆDICS
ROYAL NATIONAL ORTHOPÆDIC HOSPITAL

WEEK-END COURSE FOR REGISTRARS
5TH AND 6TH FEBRUARY, 1955
PROGRAMME

Saturday, 5th February, London Section (Lecture Room), 234, Great Portland-street, London, W.1

Demonstration: Essentials of electro-diagnosis .. .. Mr. D. M. BROOKS
Demonstration: Club foot .. .. Mr. A. T. FRIPP
Demonstration: Dupuytren's contracture .. .. Mr. J. I. P. JAMES
Clinical pathological demonstration .. Dr. H. A. SISSONS and Staff

Sunday, 6th February Country Section (Treatment Block) Brockley Hill, Stanmore, Middlesex

Demonstration: Congenital dislocation of the hip .. .. Mr. D. TREVOR
Demonstration: Problem cases .. .. Mr. P. H. NEWMAN

The fee for the course (including coffee and lunch) is 2 guineas.

Early application should be made to the Dean at 234, Great Portland-street, London, W.1.

COURSE IN THERAPEUTICS
at the
INSTITUTE OF ORTHOPÆDICS
28TH FEBRUARY–5TH MARCH, 1955

Monday, 28th February, Town Section, 234, Great Portland-street, W.1. (Lecture Room)

10.00 A.M.–11.00 A.M. Rest and Movement .. .. Mr. H. J. BURROWS
11.15 A.M.–12.35 P.M. Electrotherapy .. .. Mr. H. J. SEDDON
1.45 P.M.–3.00 P.M. Chemotherapy in Joint Tuberculosis .. Dr. F. H. STEVENSON
3.00 P.M.–4.00 P.M. Manipulation .. .. .. Mr. K. I. NISSEN

Tuesday, 1st March, Town Section

10.00 A.M.–11.00 A.M. Osteomyelitis .. .. Mr. D. TREVOR
11.15 A.M.–12.40 P.M. Treatment of Rheumatic Joint Disorders .. Dr. P. D. SAVILLE
2.00 P.M.–3.00 P.M. The Surgery of Spastic Paralysis .. Mr. K. I. NISSEN

Wednesday, 2nd March, Town Section

10.00 A.M.–11.00 A.M. Traction Injuries of Nerves .. Mr. D. M. BROOKS
11.15 A.M.–12.40 P.M. Bone Grafting and Plating .. Mr. D. TREVOR
1.45 P.M.–3.15 P.M. Arthrodesis and Arthroplasty .. Mr. H. J. BURROWS
3.15 P.M.–4.15 P.M. Tendon Injuries .. .. Mr. J. I. P. JAMES

Thursday, 3rd March, Country Section, Brockley Hill, Stanmore, Middlesex (Hut 5)

9.45 A.M.–12.30 P.M. Orthopædic Appliances; and Preservation of Movement in Joint Tuberculosis .. Mr. J. A. CHOLMELEY
2.00 P.M.–3.30 P.M. Treatment of Low Back Pain .. Mr. P. H. NEWMAN

Friday, 4th March, Country Section

10.00 A.M.–11.00 A.M. Clinical Demonstration .. Mr. A. T. FRIPP
11.30 A.M.–12.30 P.M. Clinical Demonstration .. Mr. J. I. P. JAMES
2.30 P.M.–4.00 P.M. Treatment of Pott's Disease .. Mr. H. J. SEDDON

Saturday, 5th March, Country Section

10.00 A.M.–NOON Plastic Surgery in Orthopædics .. Mr. R. L. G. DAWSON

The fee for the course (including lunch and tea) is 7 guineas.

Early application should be made to the Dean at the Town Section.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

POSTGRADUATE ACADEMIC DIPLOMA IN BACTERIOLOGY

The course for the Postgraduate Diploma in Bacteriology for the Session 1955–56 will commence in OCTOBER, 1955. This is a full-time day course extending over 1 academic year.

The course may be taken by:

(*a*) Graduates in Medicine or Veterinary Science desiring to study Bacteriology as applied to Medicine and Hygiene.

(*b*) Graduates in Science with a First or Second Class Honours degree in Chemistry, or its equivalent. For such students, the course covers the fields of General Bacteriology, Chemical Microbiology and Industrial Microbiology.

Applications for admission to the Diploma course must be received not later than 31st March, 1955.

Further information and application forms can be obtained from the Registrar, London School of Hygiene and Tropical Medicine, Keppel-street, London, W.C.1.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

DEPARTMENT OF MEDICAL STATISTICS AND EPIDEMIOLOGY
Keppel-street (Gower-street), London, W.C.1

A COURSE IN STATISTICAL METHODS APPLIED TO MEDICINE AND EPIDEMIOLOGY will be held from MARCH to JUNE, 1955 (upon Tuesdays and Thursdays from 8th March to 28th June inclusive, from 10 A.M. to 3 P.M.). Students without a medical qualification can be accepted.

Applications for admission must be made before 26th February. Details of the syllabus of this Course can be obtained on request.

Fee for the Course 10 guineas.

NAPT HUNTER SCHOLARSHIPS 1955

£350 for a British Medical Graduate to study tuberculosis abroad.

2 Scholarships of £150 for medical students who have developed tuberculosis during their studies.

Full details from the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock-square, London, W.C.1. Applications should be submitted not later than 28th February, 1955.

THE ROYAL SOCIETY

BURLINGTON HOUSE
London, W.1
REGent 3335

ROYAL SOCIETY AND NUFFIELD FOUNDATION COMMONWEALTH BURSARIES

Applications are invited for awards under the Royal Society and Nuffield Foundation Commonwealth Bursaries Scheme which was instituted to provide facilities for increasing the efficiency of scientists of proven worth by enabling them to pursue research, learn techniques, or follow other forms of study in natural science in countries other than their own in the Commonwealth where the physical or personal environment or both are peculiarly favourable.

The bursaries provide travel, maintenance at a rate of about £600 a year depending on living costs and the applicant's circumstances and are tenable usually for periods of 2–12 months; they are not intended to provide any salary as such. Bursars will not be permitted to prepare specifically for, or to take examinations for, higher degrees or diplomas.

Fuller particulars and forms of application may be obtained from the Assistant Secretary, The Royal Society, Burlington House, London, W.1. Applications should be made before 15th March, 1955, for proposed visits beginning during the period from July to December, 1955.

MEDICAL RESEARCH COUNCIL

The Medical Research Council invite applications for the following Travelling Fellowships for the academic year 1955–56:—

ROCKEFELLER TRAVELLING FELLOWSHIPS IN MEDICINE

These Fellowships are provided from a fund with which the Council have been entrusted by the Rockefeller Foundation of New York. They are intended for graduates resident in this country who have had some training in research work in clinical medicine or surgery, or in some other branch of medical science, and who are likely to profit by a period of work at a centre in the United States or elsewhere abroad, before taking up positions for higher teaching or research in the United Kingdom.

Fellowships tenable in the United States will normally carry a maintenance allowance at the rate of $2700 p.a. for a single Fellow and $3900 p.a. for a married Fellow. Provision will also be made for travelling and other approved expenses.

Further particulars of these Fellowships and forms of application may be obtained from the Secretary, Medical Research Council, 38, Old Queen-street, Westminster, S.W.1, with whom applications must be lodged not later than 15th March, 1955.

DOROTHY TEMPLE CROSS RESEARCH FELLOWSHIPS IN TUBERCULOSIS

These Fellowships are awarded by the Council from a special endowment of which they are the trustees.

The object of the Fellowships, as defined in the Trust Deed, is to give special opportunities for study or research to suitably qualified British subjects of either sex "intending to devote themselves to the advancement by teaching or research of curative or preventive treatment of tuberculosis in all or any of its forms." The Fellowships will, as a rule, be awarded to candidates who wish to make their studies or inquiries elsewhere than in the United Kingdom.

The Fellowships provide for the payment of a maintenance allowance at the rate of £650 p.a. for a single Fellow and £900 p.a. for a married Fellow, subject to appropriate adjustment in the case of Fellowships tenable at centres outside the sterling area; in addition, an allowance will be made for travelling and other approved expenses.

Further particulars and forms of application may be obtained from the Secretary, Medical Research Council, 38, Old Queen-street, Westminster, S.W.1, with whom applications must be lodged not later than 15th March, 1955.

THE UNIVERSITY OF MANCHESTER. Applications are invited for a full-time post as READER or SENIOR LECTURER IN CHEMICAL PATHOLOGY. Candidates need not be medically qualified but should have special qualifications in chemical pathology. Salary scales are (*a*) for medically qualified persons, Reader £1800–£100–£2250, Senior Lecturer £1800–£100–£2000; (*b*) for non-medically qualified persons, Reader £1250–£50–£1600, Senior Lecturer £1150–£50–£1500. (Salary scales are at present under review.) Initial salary and status according to qualifications and experience. Membership of the F.S.S.U. and Children's Allowance Scheme.

Applications should be sent not later than 26th February, 1955, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

MARLBOROUGH DAY HOSPITAL
38, Marlborough-place, N.W.8

General Practitioners and professional people working in the mental health field are invited to LECTURES held at the above on the first MONDAY in every month at 8.15 P.M.

On MONDAY, 7TH FEBRUARY, Dr. MILDRED CREAK will speak on :

"A Two months' Study Tour Canada and U.S.A."

THE UNIVERSITY OF LEEDS. Department of Pharmacology. Applications are invited from medically qualified or non-medically qualified candidates for appointment as DEMONSTRATOR IN PHARMACOLOGY; the salary scales are at present under review but it is expected that they will be such as to enable an appointment to be made for a medically qualified candidate within the range £700–£900 and for a non-medically qualified candidate within the range £550–£650 a year.

Applications (3 copies), stating date of birth, qualifications and experience, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 26th February, 1955.

Hospital Services : Senior Appointments

HOSPITALS FOR DISEASES OF THE CHEST, Brompton HOSPITAL, S.W.3. The Board of Governors invites applications for the appointment of Whole-time CLINICAL PATHOLOGIST AND BIOCHEMIST (Consultant) tenable at Brompton Hospital.

Applications (9 copies), stating date of birth, qualifications and experience in detail, with the names of 3 referees, should reach the undersigned by 16th February, 1955.

KENNETH A. F. MILES, Secretary to the Board.
Brompton Hospital, S.W.3.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1. (Designated as a teaching hospital.) The Board of Governors invites applications for a post of NEUROLOGIST, which is a Consultative one entailing occasional visits from time to time as the need arises, but there are no regular sessions. It is estimated that the time required for the duties averages 1 hour per week, but this is subject to revision in the light of experience.

Applications (10 copies) should give details of age, qualifications, experience and posts held, together with the names of 2 referees, and should be sent to the House Governor by 25th March, 1955.

BIRMINGHAM. HIGHCROFT HALL HOSPITAL. Whole-time CONSULTANT PSYCHIATRIST AND DEPUTY MEDICAL SUPERINTENDENT (resident). Higher qualification in mental diseases and considerable experience clinical psychiatry required.

Applications (15 copies), naming 3 referees, to Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 14th February, 1955. Candidates may visit Hospital.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

Mid-Worcestershire Group of hospitals

Part-time CONSULTANT PHYSICIAN (2 notional half-days weekly). Duties mainly at Highfield Hospital, Droitwich (60 Beds). Wide experience specialty with special interest in rheumatic diseases and higher qualification required.

Birmingham (Dudley Road) and West Bromwich Groups of hospitals

Part-time CONSULTANT E.N.T. SURGEONS (8 notional half-days weekly). Duties mainly at Birmingham Ear and Throat Hospital (76 Beds) (3 notional half-days), Birmingham Hearing Aid Clinic (1 notional half-day), West Bromwich General Hospital (2 notional half-days), Hallam Hospital (2 notional half-days).

Wolverhampton Group of hospitals

Part-time ASSISTANT OPHTHALMOLOGIST (2 notional half-days monthly) (£1500–£1950 p.a.). Duties mainly at Bridgnorth Infirmary. Wide experience specialty required preferably with D.O./D.O.M.S.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 14th February, 1955.

CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS AND THE EAST ANGLIAN REGIONAL HOSPITAL BOARD. CONSULTANT RADIOTHERAPIST (whole-time or maximum part-time) to be appointed jointly by the 2 Boards for duties mainly at Addenbrooke's Hospital and for some sessions in the Region. The appointment at Addenbrooke's Hospital will be as Assistant Director of the Radiotherapeutic Centre, and will include deputising for the Director when required.

Applications (12 copies), stating age, nationality, qualifications and details of present and past appointments, with names of 3 referees, to Secretary, United Cambridge Hospitals, Addenbrooke's Hospital, Cambridge, by 14th March.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited from suitably qualified registered medical practitioners for the appointment of PHYSICIAN in Physical Medicine. The appointment will be of Consultant status and will be whole-time or maximum part-time by agreement with the selected candidate. The work is mainly in the Royal Victoria Infirmary but the Physician appointed will be in charge of all physical medicine within the teaching hospital group. He will also be responsible for the supervision of the School of Physiotherapy.

Applications, stating age, qualifications, experience and present appointment, and giving the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. CONSULTANT PSYCHIATRIST/MEDICAL SUPERINTENDENT for Mental Deficiency Service in Western half of the Region. Whole-time appointment. In addition to duties as Medical Superintendent at Risbridge Hospital, Kedington (285 Beds), and Riversfield Home, St. Neots (25 Beds), there will be consultative work at Child Psychiatric Clinics. House available at Risbridge Hospital.

Applications (8 copies), stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 14th February, 1955. Candidates invited to visit Hospital by direct arrangement with Medical Superintendent, Risbridge Hospital.

LEEDS REGIONAL HOSPITAL BOARD.

Whole-time ASSISTANT PATHOLOGISTS (Senior Hospital Medical Officer scale) for duties at hospitals in the :—

(1) Harrogate and Ripon Hospital Management Committee Group.
(2) Bradford area.

The successful candidates will work under the general guidance of the Consultants in charge of the departments concerned and will be required to reside in Harrogate and Bradford respectively.

Whole-time CONSULTANT RADIOLOGIST. The successful applicant to undertake duties approximately equally divided between Hospitals in the York A and Tadcaster and the Scarborough, Bridlington, Malton and Whitby Hospital Management Committee Groups and to reside in Scarborough.

Whole-time ASSISTANT PSYCHIATRISTS (Senior Hospital Medical Officer scale) for duties at the following mental hospitals, together with outpatient clinical duties at associated general hospitals :—

Stanley Royd Hospital, Wakefield (2000 Beds).
Storthes Hall Hospital, near Huddersfield (2500 Beds).

Further details with regard to the duties, accommodation available, &c., for the above appointments may be obtained from the Secretary to the Board.

Whole-time ASSISTANT ORTHOPÆDIC SURGEONS (Senior Hospital Medical Officer scale) for duties :—

(1) At hospitals in the Pontefract and Castleford Group.
(2) Mainly at the Huddersfield Royal Infirmary and other hospitals in the Huddersfield Group.

The persons appointed to be resident in or near Pontefract and Huddersfield respectively.

Applications (12 copies), stating age, qualifications and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 19th February, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Maximum Part-time CONSULTANT ANÆSTHETIST to the Bolton and District Hospitals (Bolton Royal Infirmary, Bolton District General Hospital, &c.). Wide experience, higher qualification in anæsthetics essential. Appointee to live in or near Bolton. 18th February, 1955.

(*b*) Whole-time NON-RESIDENT ASSISTANT PHYSICIAN in Geriatrics (Senior Hospital Medical Officer) to the Wigan and Leigh Hospital Centre, main duties in Leigh area (Atherleigh, Astley and Ashton Hospitals and occasionally at Leigh Infirmary). Appointee will work under general supervision of Consultant Physician and will be required to undertake the domiciliary investigation of patients and to establish close liaison with general practitioners and the Local Health Authorities. Good experience in general medicine and previous experience in care of chronic sick desirable. Appointee to live in or near Leigh. 20th February, 1955.

(*c*) 2 Whole-time NON-RESIDENT SENIOR CASUALTY OFFICERS :

(i) Burnley and District Hospitals, main duties at the Victoria Hospital, Burnley.
(ii) Stockport and Buxton Hospitals, mainly at Stockport Infirmary.

Special experience required in the treatment of orthopædic cases, fractures and trauma. Appointees will assist the Consultant Orthopædic Surgeons and also have special responsibilities in the Casualty and Traumatic (including Fracture) Clinics, subject to general supervision of the Consultants. Salary within range £1500–£50–£1950 (according to experience, &c.). A higher qualification desirable. Tenure of posts limited to 4 years. 7th February, 1955.

Application forms from the Senior Administrative Medical Officer to the Board at Cheetwood-road, Manchester, 8, to be returned by dates stated.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ASSISTANT ANÆSTHETIST (whole-time) at West Herts Hospital, Hemel Hempstead, Herts (167 Beds). Salary £1500 (unless below age 32)–£1950. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 7th March, 1955.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time or Whole-time CONSULTANT RADIOTHERAPIST to the Hogarth Radiotherapeutic Centre at Nottingham General Hospital and associated clinics in the area. Applicants should state whether they wish to be considered for the designation of Radiotherapist-in-Charge.

Application form and further details obtainable from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 26th February, 1955.

NEWCASTLE REGIONAL HOSPITAL BOARD. Locum Tenens Whole-time CONSULTANT ANÆSTHETIST required at Sedgefield General Hospital, co. Durham. 3 weeks commencing 20th February.

Applications to be sent immediately to Senior Administrative Medical Officer, Newcastle Regional Hospital Board, "Blythswood South," Jesmond, Newcastle, 2, together with names and addresses of 2 referees.

NEWCASTLE REGIONAL HOSPITAL BOARD AND WESTERN REGIONAL HOSPITAL BOARD, SCOTLAND. SENIOR OPHTHALMIC SURGEON (Consultant) for Special Area of Cumberland and North Westmorland (population 304,000) and the Dumfries and Galloway Hospital Board (population 130,000). Appointment is senior of a team of 3 Consultant Ophthalmic Surgeons and carries responsibility for administrative organisation of Eye Service in above areas. To reside in or near Carlisle where an Eye Unit of 33 beds with its own theatre is being established at the Cumberland Infirmary. Surgeon will hold separate contracts with the 2 Boards and must spend 1 or 2 sessions per week at Dumfries and Galloway Royal Infirmary. Inquiries for further particuars and applications with names and addresses of 3 referees to Senior Administrative Medical Officer, 72, Warwick-road, Carlisle, within 28 days.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. BORDERS HOSPITALS BOARD OF MANAGEMENT. Applications are invited from registered medical practitioners with administrative experience for the superannuable post of GROUP MEDICAL SUPERINTENDENT, on a salary scale of £1550–£75(2)–£1700–£100–£1800 p.a. The duties attaching to the post include responsibility to the Board of Management for the medical administration of the 18 hospitals comprising the Group. The main hospital of 220 Beds is Peel Hospital which is situated on the Tweed, near Galashiels.

Applications, giving particulars of age, qualifications and experience, together with the names and addresses of 3 referees, should be sent to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, to reach him not later than 16th February, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill a vacancy for a Whole-time CONSULTANT PATHOLOGIST at the Dartford, Kent, Group of hospitals. Candidates must have had wide experience in pathology and a higher University degree or membership of a Royal College of Physicians is desirable. Applicants may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 12th February, 1955.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time CONSULTANT RADIOLOGIST (2 half-days per week) at Queen Mary's Hospital for Children, Carshalton, Surrey.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 26th February, 1955. Applicants may visit Hospital by local arrangement.

CANADA. ONTARIO INSTITUTE OF RADIOTHERAPY, TORONTO GENERAL HOSPITAL, TORONTO, ONTARIO, CANADA. ASSISTANT RADIOTHERAPIST for the above Institute. Salary according to qualifications, but not less than $9000 p.a.

Applications should state date of birth, qualifications, experience, present appointment, and the names of 2 referees. Replies to be sent by air-mail to the Director, Ontario Institute of Radiotherapy, Toronto General Hospital, 101, College-street, Toronto, Ontario, Canada.

Hospital Services : Junior Appointments

BROMPTON HOSPITAL, S.W.3. Applications invited for post of MEDICAL REGISTRAR (whole-time). Salary within the Registrar grade. The appointment is for 1 year, commencing 1st March, 1955, or earlier, with eligibility for reappointment. Candidates must hold the M.R.C.P. Diploma or the M.B. of a university.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 5th February, to KENNETH A. F. MILES, House Governor.

BROMPTON HOSPITAL, S.W.3. Applications invited for post of NON-RESIDENT HOUSE PHYSICIAN, for which there are 3 vacancies, for 6 months from 1st April. Duties include work in Outpatient Department and wards. Salary £475 or £525 a year, according to experience.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 5th February, to KENNETH A. F. MILES, House Governor.

BROMPTON HOSPITAL SANATORIUM, Frimley. Applications invited for post of RESIDENT MEDICAL OFFICER, for 6 months commencing 1st April, with eligibility for reappointment. Salary within the Registrar grade. Previous experience of chest work desirable.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 5th February, to KENNETH A. F. MILES, House Governor.

Brompton Hospital, S.W.3.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER (pre-registration), required in Orthopædic Department. Appointment for 6 months from 16th February, 1955.

Applications, with 2 testimonials, to Medical Director by 5th February, 1955.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of HOUSE SURGEON to Gynæcological Department (recognised for M.R.C.O.G.). Duties to commence 1st April, 1955. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers. Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 9th February, 1955.

EASTERN HOSPITAL (Fevers), London, E.9. House OFFICERS (third post), vacant 1st April. Duties may include some work in Chest Unit. Facilities for postgraduate study for higher qualifications.

Applications, with testimonials, to Group Secretary, Hackney Hospital, E.9, by 12th February, quoting EH/HO.

EASTMAN DENTAL HOSPITAL AND INSTITUTE OF DENTAL SURGERY. (UNIVERSITY OF LONDON), Gray's Inn-road, W.C.1. Applications are invited for the appointment of ANÆSTHETIST in the grade of Registrar from 1st April, 1955.

Application forms are obtainable from the Director, to whom they should be returned by 7th February, 1955.

GERMAN HOSPITAL, London, E.8. (General—157 Beds.) Applications are invited from registered medical practitioners for the 6 months appointment of HOUSE SURGEON (obstetrics and gynæcology), vacant on 15th February, and should be sent to the Group Secretary, Hackney Hospital, E.9, quoting GH/HS.

GUY'S HOSPITAL, S.E.1. Applications are invited for the appointment of REGISTRAR (whole-time) to the Radiotherapy Department. D.M.R. preferred but not essential. Duties to commence as soon as possible.

Forms of application, obtainable from the Superintendent, Guy's Hospital, should be forwarded not later than 5th February, 1955.

HACKNEY HOSPITAL, London, E.9. (General—842 Beds.) Applications are invited for the full-time post of JUNIOR HOSPITAL MEDICAL OFFICER of the geriatric wards at the above Hospital, to assist the Physician-in-Charge. The department (to which the full facilities of the Hospital for investigation and treatment are available, including a modern Occupational Therapy Department) contains 164 Beds for patients undergoing active treatment and rehabilitation, and 160 Beds for long-stay cases. The appointment (£775–£50–£1075 p.a.) is for a period not exceeding 4 years in the first instance.

Applications should reach the Group Secretary at the above address by 12th February.

KING'S COLLEGE HOSPITAL, Denmark-hill, S.E.5. Applications are invited for the post of SENIOR REGISTRAR in Ophthalmology at the Royal Eye Hospital. Applicants should hold a higher surgical qualification and have had previous experience in an ophthalmic post. The appointment, which is subject to the terms and conditions of service for medical and dental staffs, will be tenable until 30th September, 1955, in the first instance, and is subject to reappointment.

Applications, stating age, education, qualifications and experience, with the names of 2 referees, should be sent to the undersigned as soon as possible.

S. W. BARNES, House Governor.

KING EDWARD MEMORIAL HOSPITAL, Ealing. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN, vacant 1st March, 1955. Preference given to persons seeking pre-registration post under Medical Act, 1950.

Applications, stating age, nationality, qualifications with dates and details of experience, together with copies of 2 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 8th February, 1955.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. 2 vacancies occur 1st April, 1955, for RESIDENT HOUSE PHYSICIAN. Appointments for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and posts are graded as House Officer. Duties include work in the Outpatient Department and Refill Clinic as well as in wards.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 19th February.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of Part-time REGISTRAR to the Department of Plastic Surgery. A higher qualification, although desirable, is not essential. The successful candidate would be required to attend on 6 half-days weekly, and the duties will be divided between The London Hospital, its Annexe at Brentwood and the Hackney Hospital.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the House Governor by 25th February, 1955.

MILE END HOSPITAL, Bancroft-road, E.1. (475 Beds.) HOUSE SURGEON (pre-registration, or first, second, or third). Required for duty on 8th March, 1955.

Application forms obtainable from Physician-Superintendent, to be returned by 4th February, 1955, with copies of not more than 3 testimonials.

MILE END HOSPITAL, Bancroft-road, E.1. House OFFICER (second or third post—obstetrics). Post recognised in Obstetrics for M.R.C.O.G., required for 6 months commencing 1st March, 1955.

Application forms, which may be obtained from Physician-Superintendent, to be returned by 4th February, 1955.

MOORFIELDS, WESTMINSTER AND CENTRAL EYE HOSPITAL, WESTMINSTER BRANCH, High-Holborn, London, W.C.1. Applications are invited from Male practitioners for the post of RESIDENT SURGICAL OFFICER (Registrar grade). The successful candidate will be required to take up his duties on 1st April, 1955, and if recommended by the Medical Committee will be eligible for appointment as Senior Resident Surgical Officer for a period of 6 months from 1st April, 1956, making a total period of service of 18 months. Experience in ophthalmology is essential. Candidates are required to call upon the Consultant staff at the Westminster Branch.

Forms of application are obtainable from the undersigned, to whom they should be returned with copies of not more than 3 testimonials, by 25th February, 1955.

J. P. HEMING, Secretary.

MEMORIAL HOSPITAL, Woolwich, S.E.18. Woolwich GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics), vacant 21st February at above Hospital. Recognised for F.F.A. R.C.S. and D.A. 6 months appointment and may then be renewed. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

NATIONAL HEART HOSPITAL, Maida Moreton, BUCKINGHAM. (Country Branch of the National Heart Hospital.) Applications are invited for the post of RESIDENT MEDICAL OFFICER at the Hospital's country branch. The appointment is for a period of 6 months from 1st April, 1955, but may be renewed for a further period not exceeding 6 months. The status of the post is that of a Senior House Officer and the salary is in accordance with the terms and conditions of service of hospital medical staff. The holder will be expected to attend on 1 day weekly at the Hospital in Westmoreland-street.

Applications, with copies of 3 recent testimonials, should be sent to me at Westmoreland-street, London, W.1, not later than Saturday, 12th February, 1955.

ROBERT G. E. WHITNEY, Secretary to the Board.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of ASSISTANT REGISTRAR (whole-time) to the Outpatients' Department at The National Hospital, Queen-square, W.C.1. This post carries the grade of Senior Registrar. The appointment will be for 1 year in the first instance.

Applications, giving the names of 3 referees, to be sent to the undersigned not later than 2nd February, 1955.

H. EWART MITCHELL, Secretary.

The National Hospitals for Nervous Diseases,
Queen-square, W.C.1.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

REGISTRAR in General and Orthopædic Surgery (resident), Tilbury and Riverside General Hospital, Tilbury, Essex. Recognised for F.R.C.S.

SURGICAL REGISTRAR (resident), St. Leonard's Hospital, Nuttall-street, N.1. Candidates should possess higher qualification.

REGISTRAR in Psychiatry (resident or non-resident), Severalls Hospital, Colchester, Essex.

Appointments subject to review after 1 year.

Separate applications in duplicate, with 2 copies of 2 recent testimonials, to Secretary, 11A, Portland-place, W.1, by 12th February, 1955.

NORTH MIDDLESEX HOSPITAL AND EDMONTON CHEST CLINIC, N.18. SENIOR HOUSE OFFICER (tuberculosis), resident, required. 6 months appointment with possible extension to 1 year. Duties at above Hospital and Clinic, medical and surgical, under the direction of Chest Physician and Thoracic Surgeon. Further details on request.

Applications, stating age, nationality, qualifications, experience, together with copies of recent testimonials and/or names of 2 referees, to Secretary of Hospital, immediately.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. SENIOR HOUSE OFFICER (resident) for Psychiatric Unit. The Unit is complete from every point of view and includes a small observation ward. The appointment which is recognised for the D.P.M., and offers admirable opportunities for a young physician anxious to specialise in psychological medicine, is for 6 months from 1st April with possible extension to 1 year (LOCUM required from 18th March).

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials and/or names of 2 referees, to Secretary of Hospital, by 8th February.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. RESIDENT HOUSE ANÆSTHETIST (House Officer), required for 15th March. 6 months appointment. Post recognised for D.A. and F.F.A. R.C.S. Whole-time duties under supervision of Senior Anæsthetists.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 8th February.

PADDINGTON GENERAL HOSPITAL, 285, Harrow-road, W.9. Applications are invited for the whole-time non-resident post of SENIOR HOUSE OFFICER. Duties mainly concerned with tuberculosis, some general medicine.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, to be forwarded to Secretary to Committee by 4th February, 1955.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (219 Beds.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER RESIDENT HOUSE SURGEON to Orthopædic Fracture and Traumatic Department, E.N.T. Department, and SENIOR CASUALTY OFFICER, for a period of 6 months, vacant 22nd February, 1955.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (219 Beds.) TOTTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE (GROUP 4). Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER RESIDENT ANÆSTHETIST, for a period of 6 months, vacant middle March. Post recognised for F.F.A. R.C.S.

Application form from Secretary, to be returned by 7th February, 1955.

PUTNEY HOSPITAL, Lower Common, S.W.15. House SURGEON (resident), vacant 20th February. Open to registered practitioners and pre-registration candidates.

Apply Hospital Secretary, enclosing copies of 3 recent testimonials, by 3rd February.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and BANSTEAD WOOD, SURREY. HOUSE OFFICER (recognised for D.C.H.). This appointment will be made for 2 periods of 6 months commencing 1st April, 1955, and 1st November, 1955 (leave intervening). First appointment as House Physician and second as House Surgeon and Casualty Officer.

Application forms may be obtained from the Secretary at Hackney-road, and should be returned with copies of not more than 3 testimonials on or before 14th February, 1955.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. SENIOR OBSTETRIC HOUSE SURGEON (Male or Female), Senior House Officer grade, for 6 months commencing 27th February, 1955. Post recognised for M.R.C.O.G.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 9th February, 1955.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. OBSTETRIC HOUSE SURGEON (Male or Female) House Officer third post, for 6 months, commencing 27th February, 1955. Successful candidate may be eligible for appointment as Senior Obstetric House Surgeon (Senior House Officer grade) for the following 6 months. Post recognised for M.R.C.O.G.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 9th February, 1955.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. PÆDIATRIC HOUSE PHYSICIAN (House Officer third post). Duties include some work in related departments—e.g., Diabetic Clinic, &c. 6 months appointment commencing as soon as possible. Post recognised for D.C.H.

Applications, with copies of testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 12th February, 1955.

ROYAL EYE HOSPITAL. King's College Hospital GROUP. Applications are invited for the post of SENIOR HOUSE OFFICER from 1st April, 1955.

Applications, with copies of recent testimonials, should be made to the Secretary, The Royal Eye Hospital, St. George's-circus, S.E.1.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, London, W.1. Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER for a period of 6 months; duties to commence 8th April, 1955.

Applications to be received not later than 12th February, 1955. Forms of application can be obtained from the House Governor at 234, Great Portland-street, London, W.1.

ROYAL NORTHERN HOSPITAL, Holloway, London, N.7. (279 Beds—55 medical, 17 children.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR MEDICAL REGISTRAR required at above Hospital. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Royal Northern Hospital, by 8th February, 1955.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time JUNIOR HOSPITAL MEDICAL OFFICER for the Blood Transfusion Service in the South West and South East Metropolitan Regions. Duties will be divided between blood collection from donors in the area covered by the South West and South East Metropolitan Regional Hospital Boards and laboratory work, including research, at the South London Blood Transfusion Centre, Stanley-road, Sutton, Surrey. The appointment offers ample scope in serology and hæmatology and all aspects of blood transfusion. Salary scale £775–£50–£1075 p.a.

Applications (2 copies), giving date of birth, qualifications, experience and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 12th February, 1955. Applicants may visit Blood Transfusion Centre by arrangement with the Medical Director there.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications are invited for the post of SENIOR HOUSE OFFICER at the Alexandra Hospital for Children, Stockwood Park, Luton, for a period of 6 months from a starting date to be arranged. This appointment is of a temporary nature and may be extended. The Hospital is mainly for long-stay orthopædic cases.

Applications, with copies of 2 testimonials, should be submitted to the undersigned within 10 days from the appearance of this advertisement.

C. C. CARUS-WILSON, Clerk to the Governors.

ST. MARYLEBONE HOSPITAL FOR PSYCHIATRY AND CHILD GUIDANCE, 48, Cosway-street, Marylebone-road, N.W.1. CLINICAL ASSISTANT required for 2 half-day sessions per week to assist in E.C.T. and related treatments clinic. Experience of physical treatments, anæsthetics and some psychiatric knowledge required. Salary £175 p.a. per weekly half-day.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, to be forwarded to Hospital Secretary, 73, Welbeck-street, W.1, by 12th February, 1955.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified practitioners for the post of non-resident Whole-time REGISTRAR in General Medicine. The successful applicant will be required to undertake work in the Casualty and Outpatient Departments as well as having certain inpatient duties. The appointment will be for a first period of 12 months, as from a date to be arranged.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 10th February, 1955.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Upper-road, Plaistow, London, E.13. RESIDENT SENIOR HOUSE OFFICER (general medicine) required for a period of 12 months commencing mid-February, 1955.

Apply to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, naming 3 referees, by 5th February, 1955.

ST. NICHOLAS HOSPITAL, Tewson-road, Plumstead, S.E.18. SENIOR HOUSE OFFICER (general surgery and orthopædics), vacant 14th February. Recognised for F.R.C.S. 6 months appointment and may then be renewed. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. THOMAS'S HOSPITAL AND THE SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. (Joint appointment.) Whole-time SENIOR SURGICAL REGISTRAR at St. Thomas's Hospital and the 3 major Portsmouth Hospitals. The successful candidate will work mainly at St. Thomas's Hospital, and, subject to annual re-election, may be required to spend 1 year at Portsmouth.

Applications (5 copies), including names and addresses of 2 referees, to the Clerk of the Governors, St. Thomas's Hospital, London, S.E.1, by 12th February, 1955.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies for the following Senior House Officers :—

1 HOUSE PHYSICIAN on 15th May, 1955.

1 HOUSE SURGEON to the Orthopædic and Plastic Departments on 15th May, 1955.

Further particulars and form of application, which must be returned not later than 28th February, 1955, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

WHIPPS CROSS HOSPITAL, London, E.11. Leytonstone (NO. 10) HOSPITAL GROUP. Applications are invited from fully registered medical practitioners for 2 posts of HOUSE PHYSICIAN in General Medicine at above Hospital. 1 post is available immediately, the second post being vacant from 12th March, 1955.

Application forms from the Hospital Secretary, to be returned by not later than 9th February, 1955.

WHITTINGTON HOSPITAL, London, N.19. Surgical REGISTRAR required. Unit consists of general surgical beds with large gastro-enterological section. F.R.C.S. desirable. Hospital may be visited by appointment with Medical Superintendent.

Application forms obtainable from, and returnable to, Group Secretary, Archway Group Hospital Management Committee, 46, Cholmeley-park, N.6, by 7th February, 1955.

WHITTINGTON HOSPITAL, N.19. Surgical Registrar (whole-time) required for Neurosurgical Unit from 1st May, 1955. Duties may include neurosurgical work in certain mental hospitals. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Archway Group Hospital Management Committee, 46, Cholmeley-park, N.6, by 7th February, 1955.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. ABERDEEN ROYAL INFIRMARY. Applications are invited for the appointment of a REGISTRAR in Ophthalmology for the above Hospital. The post is a whole-time one and is non-resident. Salary and conditions of service are in accordance with the terms issued by the Department of Health for Scotland.

Applications, giving details of qualifications and experience, with the names of 2 referees, should be lodged with the Secretary, Aberdeen General Hospitals, 62, Queen's-road, Aberdeen, within 14 days of the appearance of this advertisement.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, 2 RESIDENT HOUSE SURGEONS (Male) for general surgical duties. 6 months appointments : (1) vacant on 1st March, 1955 ; (2) on 8th March, 1955. Preference given to pre-registration candidates.

Applications, stating age, qualifications, and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. HOUSE OFFICER (pediatrics) required at Ashton-under-Lyne General Hospital. Recognised for D.C.H.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 testimonials, should be forwarded to the Group Secretary, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, Lancs, as soon as possible.

BATH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from medical practitioners for post of HOUSE SURGEON (gynæcology and obstetrics), vacant 28th March at the Bath Group of hospitals. The post is recognised for pre-registration purposes and for Diploma of the R.C.O.G.

Applications, stating age, qualifications and experience, with 3 testimonials, should be forwarded to Group Secretary, Manor Hospital, Bath, by 8th February, 1955.

BATH. ST. MARTIN'S HOSPITAL. (640 Beds.) Appli-cations are invited from registered medical practitioners for the post of RESIDENT CASUALTY OFFICER (Senior House Officer grade) at above Hospital. Post vacant 27th March.

Applications, stating age, qualifications and experience, with 2 testimonials, should be forwarded to Group Secretary, Bath Hospital Management Committee, Manor Hospital, Bath, by 12th February, 1955.

BATH. ST. MARTIN'S HOSPITAL. Applications are invited from medical practitioners for the post of HOUSE PHYSICIAN at above Hospital. Post is recognised for pre-registration purposes and is vacant at end of March.

Applications, stating age, qualifications and experience, with 3 testimonials, should be forwarded to Group Secretary, Bath Hospital Management Committee, Manor Hospital, Bath, by 12th February, 1955.

BARROW-IN-FURNESS. NORTH LONSDALE HOS-PITAL. BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for a post of SENIOR HOUSE OFFICER (surgical) at the North Lonsdale Hospital, Barrow-in-Furness. Post recognised for F.R.C.S. National conditions and salary scale.

Applications to Group Secretary, 52, Paradise-street, Barrow-in-Furness.

BARROW-IN-FURNESS. NORTH LONSDALE HOS-PITAL. BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for a resident post of HOUSE OFFICER (medical) at the North Lonsdale Hospital, Barrow-in-Furness ; recognised for pre-registration.

Applications to Group Secretary, 52, Paradise-street, Barrow-in-Furness.

BARROW-IN-FURNESS. NORTH LONSDALE HOS-PITAL. BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for a resident post of HOUSE SURGEON (recognised for pre-registration and F.R.C.S.) at the North Lonsdale Hospital, Barrow-in-Furness, with surgical work under control of Consultant Surgeons.

Applications to Group Secretary, 52, Paradise-street, Barrow-in-Furness.

BEDFORD GENERAL HOSPITAL. North West Metro-POLITAN REGIONAL HOSPITAL BOARD. RESIDENT REGISTRAR (obstetrics and gynæcology) required at the above Hospital. Maternity Unit 61 Beds ; Gynæcological Unit 26 Beds. Hospital may be visited by direct appointment. Post vacant 3rd March, 1955.

Application form obtainable from, and returnable to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by 5th February, 1955.

BEDFORD GENERAL HOSPITAL. (437 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR required for busy acute Orthopædic and Traumatic Department at the above Hospital. Previous orthopædic experience desirable. Candidates may visit Hospital by appointment with the Group Secretary. Post vacant end of March.

Application form obtainable from, and returnable to, Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by 5th February, 1955.

BLACKBURN ROYAL INFIRMARY. (282 acute beds.) JUNIOR HOSPITAL MEDICAL OFFICER (orthopædics and casualty) required. Post is of limited tenure up to 4 years and is recognised for F.R.C.S.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKPOOL. VICTORIA HOSPITAL. (344 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Department of Thoracic Surgery). Main duties at the Victoria Hospital, Blackpool. Post offers excellent opportunities for gaining experience under a Consultant Thoracic Surgeon.

Applications, with references or names and addresses of referees, should be sent to the Hospital Secretary.

BLACKPOOL. VICTORIA HOSPITAL. (344 Beds.) SENIOR HOUSE OFFICER (Orthopædic and Casualty Department). Recognised for 6 months casualty training for Final F.R.C.S. examination. Provides excellent opportunity for gaining experience in a department under the control of a Consultant Orthopædic Surgeon.

Applications, with references, should be sent to the Hospital Secretary.

BLACKPOOL. VICTORIA HOSPITAL. (344 Beds.) HOUSE SURGEON (casualty and orthopædics), vacant 2nd March, 1955. Recognised for 6 months casualty training for Final F.R.C.S. examination and for Pre-registration Service. Main duties in the Casualty and Orthopædic Departments. This is a busy general hospital with a large Outpatient Department and the post provides excellent opportunities for gaining experience.

Applications, with references, to the Hospital Secretary.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of REGISTRAR in Orthopædic Surgery at the Royal Victoria Hospitals, Boscombe, Bournemouth, consisting of 494 Beds which includes 64 orthopædic beds. There is a large Outpatient Department covering both traumatic and non-traumatic orthopædics in all branches in children and adults. The post is non-resident and is tenable for 2 years in the first instance.

Forms of application obtainable from the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe, should be returned to him, duly completed, within 8 days of the appearance of this advertisement.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT OBSTETRIC HOUSE OFFICER for post vacant 25th February, 1955. The appointment is recognised for the F.R.C.S. examination and for the Diploma in Obstetrics.

Applications to the Deputy Hospital Secretary.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. THE CHILDREN'S HOSPITAL. Applications are invited for the appointment of SURGICAL REGISTRAR (non-resident) in the grade of Registrar, vacant 1st April, 1955. Preference will be given to candidates holding a higher qualification. Residence in the Hospital will be required when the Resident Surgical Officer is absent.

Forms of application may be obtained from the House Governor, The Children's Hospital, Ladywood-road, Birmingham, 16, and should be returned not later than 13th February, 1955. G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. GENERAL HOSPITAL. Applications are invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER (Senior House Officer grade). The appointment is tenable for 1 year. Candidates must be registered medical practitioners and have held a resident appointment.

Forms of application may be obtained from, and should be returned as soon as possible to, the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. Required, SENIOR HOUSE OFFICER or HOUSE OFFICER (including pre-registration), according to experience.

Detailed applications, with copies of 2 recent testimonials, to the Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

1. **Birmingham (Dudley Road) Group Hospital Management Committee, Dudley Road Hospital, Birmingham, 18**

Whole-time REGISTRAR in Pathology required for Dudley Road Hospital

2. **Birmingham (Selly Oak) Hospital Management Committee, Oak Tree-lane, Birmingham, 29**

(*a*) REGISTRAR in Pathology for Birmingham Accident Hospital, Bath-row, Birmingham, 15. Previous experience essential. Higher qualification desirable. Experience available in hæmatology including blood transfusion, bacteriology, biochemistry and morbid anatomy. Details from Consultant Pathologist.

(*b*) REGISTRAR in General Surgery. Duties at Little Bromwich and Solihull Hospitals. Higher qualification desirable. Resident at Little Bromwich Hospital.

Application forms from Group Secretaries, to be returned before 14th February, 1955. Candidates may visit hospitals.

BEXHILL HOSPITAL, Bexhill. (62 Beds.) House SURGEON required. Pre-registration post vacant now. A small modern hospital on the South Coast, considerable acute surgical work and busy Outpatient Department, excellent all-round experience. National scale of salary.

Apply to Hospital Administrator.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAYMEADS HOSPITAL. (Midway between London and Cambridge—Main Line from Liverpool Street.) Applications are invited for post of SENIOR HOUSE OFFICER (pathology), resident. Appointment to commence in April for period of 1 year. Salary £745, less £130 p.a. in respect of residential emoluments.

Applications, stating qualifications, nationality, age and experience, with copies of recent testimonials or names of 2 referees, to Hospital Secretary.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE GROUP OF HOSPITALS. HOUSE SURGEON required in the E.N.T. Department of the above Group, vacant in March. Recognised for F.R.C.S. and D.L.O.

Applications, with details of experience, age, and qualifications, and naming 2 referees, to be sent to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRISTOL CLINICAL AREA. The Board of Governors of THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in Pædiatrics. The appointment, which is resident, and married quarters will shortly be available, will be held for 1 year in the first instance and be renewable for a further year. The successful candidate will be appointed to work for the first year at Southmead Hospital, Bristol, which is associated with the University Departments of Child Health and Obstetrics. The post offers excellent experience in general pædiatrics, neonatal pædiatrics, and care of the premature baby.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 10th February, 1955.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required in the Thoracic Surgery Department which is the Regional Thoracic Surgery Centre (120 Beds) for the South West.

Applications, with full particulars, should be addressed to the Group Secretary, Frenchay Hospital, Bristol, quoting "Thoracic."

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. (513 staffed beds, expanding.) Applications are invited for the post of SENIOR HOUSE OFFICER in the Regional Neurosurgery Department. Vacant shortly. This post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis.

Applications, quoting 2 referees, to the Secretary, Frenchay Hospital, quoting N.S.F.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in Pædiatrics. The post is based on Bury General Hospital, but will include duties at other hospitals in the Group.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. CLINICAL PATHOLOGIST (Senior House Officer grade). Resident or non-resident, with duties mainly at Bury General Hospital. The post affords opportunities for gaining experience in all branches of pathology.

Apply, stating nationality, qualifications, &c., and names of 2 referees, to H. WILKINSON, Esq., Group Secretary.

Bury General Hospital, Bury, Lancs.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the appointment of RESIDENT MEDICAL OFFICER, Cardiff Royal Infirmary (Senior House Officer grade).

Application forms can be obtained from the Secretary, United Cardiff Hospitals, Cardiff Royal Infirmary, Newport-road, Cardiff.

CARLISLE. GARLANDS HOSPITAL. Garlands Hospital MANAGEMENT COMMITTEE. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER at above Mental Hospital (1000 patients). Resident post. Salary scale £775–£50–£1075 p.a. Terms and conditions of service of hospital medical staff. Furnished or unfurnished flat available, suitable for married man.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, to be submitted to the Medical Superintendent as soon as possible.

CARSHALTON. QUEEN MARY'S HOSPITAL FOR CHILDREN. (General Children's Hospital of 840 Beds.) 2 HOUSE PHYSICIANS (Senior House Officers). Care of acute medical, rheumatism and poliomyelitis beds. Positions vacant end of March.

Applications, stating age, qualifications and experience, with copies of 3 testimonials, should reach the Secretary by 14th February, 1955.

CHEPSTOW, MONMOUTHSHIRE. ST. LAWRENCE HOSPITAL. (100 plastic surgery, 50 orthopædic beds.) PLASTIC SURGERY, JAW INJURIES AND BURNS CENTRE. SENIOR HOUSE OFFICER in Plastic Surgery required. Previous experience in specialty not essential. The successful candidate will receive a thorough training in plastic surgery and burns. Hospital intakes from most of Wales and provides extensive experience. There is another Senior House Officer in Plastic Surgery, and also a Senior House Officer in Orthopædics. Salary £745, less £150 board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary, 64, Cardiff-road, Newport, Mon.

CHICHESTER, SUSSEX. GRAYLINGWELL HOSPITAL. Applications are invited for the post of MEDICAL RESEARCH FELLOW in the Department of Clinical Research. The appointment will be initially for a period of 1 year, but will be subject to renewal for a further period. Salary will be at some point on the scale £1100–£1400 per year, according to qualifications and experience. Candidates should have had good medical and psychiatric experience and obtained the D.P.M. or other qualification.

Application forms (obtainable from the Group Secretary) are returnable within 14 days of the appearance of this advertisement.

CLACTON AND DISTRICT HOSPITAL, Clacton-on-Sea. (58 Beds.) Applications invited for post of SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year.

Applications, with copies of 3 testimonials, to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

CREWE AND DISTRICT MEMORIAL HOSPITAL, CREWE. Locum ANÆSTHETIST required at the above Hospital for the month of March. Salary payable in accordance with status.

Applications to be sent to the Group Secretary, Group Headquarters, Barony Hospital, Nantwich, Cheshire, within 7 days.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (Post recognised for D.A.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) required. Post becomes vacant 2nd April, 1955. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 7th February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DEWSBURY. STAINCLIFFE GENERAL HOSPITAL, Healds-road, DEWSBURY, YORKS. HOUSE OFFICER (general medicine and dermatology), vacant 1st March and tenable for 6 months. Recognised pre-registration post. The Hospital has 68 acute medical beds.

Applications, with full details and quoting this journal, to the Administrative Officer at the Hospital.

DONCASTER ROYAL INFIRMARY. (330 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT MEDICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 7th February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP. BIRMINGHAM REGION. Applications invited from registered practitioners for following appointments :—

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (Anæsthetist). Post now vacant.

HOUSE OFFICER (surgical), pre-registration. Post vacant January.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (resident), Anæsthetist. Post now vacant. In addition to general surgery, experience is available in gynæcology and there is a major Orthopædic Unit. Regional Plastic Surgery Unit at this Hospital.

SENIOR HOUSE OFFICER (surgical).

Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

DURHAM. DRYBURN HOSPITAL. (309 Beds.) House OFFICER (general surgery). Post vacant 1st February, 1955. Recognised under F.R.C.S. regulations and for pre-registration purposes.

Applications, with names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

DURHAM. COUNTY HOSPITAL. (116 Beds.) Resident HOUSE SURGEON required immediately in Orthopædics and Casualty. Post recognised for pre-registration purposes. This post offers facilities for good and varied experience in a busy Orthopædic and Accident Hospital which serves a wide mining and industrial area.

Apply, giving age, experience, and names of 2 referees, to the Group Secretary, Dryburn Hospital, Durham.

DORCHESTER. DORSET COUNTY HOSPITAL. (113 Beds.) HOUSE SURGEON required (Male or Female). Post vacant mid-February and tenable for 6 months. Recognised for F.R.C.S. examination and approved for Pre-registration Service.

Applications, stating age, experience, qualifications and nationality, together with copy testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER in Geriatrics. This is a newly created post. The duties will involve the medical treatment and rehabilitation of elderly sick in a new and developing department of the Hospital. There will be facilities for postgraduate study.

Applications, stating age, qualifications, experience, and the names of 2 referees, to Group Secretary by 5th February, 1955.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) 2 RESIDENT OBSTETRIC HOUSE SURGEONS for above Hospital. Posts vacant 2nd and 14th March, 1955. 6 months appointments. Posts recognised for M.R.C.O.G. purposes.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 5th February, 1955.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. CLINICAL ASSISTANT required in the Department of Physical Medicine for 2 half-day sessions per week. National Health Service salary and conditions of service.

Applications, stating age, qualifications, and experience, with the names and addresses of 2 referees, should reach the Group Secretary, Edgware General Hospital, by 9th February, 1955.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (E.N.T. Department—31 Beds), vacant February, 1955. Resident or non-resident. The post is recognised for the F.R.C.S. examination.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary immediately.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (Fracture Department), vacant 21st February, 1955.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary immediately.

FARNBOROUGH HOSPITAL, Farnborough, Kent. CASUALTY OFFICER (Senior House Officer) required immediately for 1 year. Deduction for residence £150.

Apply, giving age, qualifications with dates, and experience, and naming 3 referees, to the Administrative Officer.

GRIMSBY GENERAL HOSPITAL. (238 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (orthopædics) required. The post is recognised to the extent of 6 months for the F.R.C.S. and the Hospital has an excellent reference library.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 7th February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

GRIMSBY GENERAL HOSPITAL. (238 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN (Pre-registration or Senior House Officer grade). The Hospital has a well-equipped medical library and reading-room.

Applications, together with the names of 2 referees, to be sent to the Hospital Secretary, Grimsby General Hospital, Grimsby.

GLASGOW. ROYAL HOSPITAL FOR SICK CHILDREN. (312 Beds.) Vacancies exist for 3 RESIDENT HOUSE OFFICERS in Surgical Pædiatrics at the above Hospital for the term February–August, 1955. These posts are recognised for pre-registration.

Applications should be sent to the Medical Superintendent.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Surgery (Maxillo-facial Unit). Duties at above Infirmary.

Write, giving 3 names for reference, not later than 12th February, 1955, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. PSYCHIATRIC UNIT. HOUSE OFFICER (resident), Male or Female, required on 1st April. 180 Beds. Over 1300 admissions yearly acute treatable cases. Unit recognised for D.P.M. Salary £50 above standard rate.

Apply to Medical Superintendent.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in the Pulmonary Tuberculosis Unit (32 Beds) with an attachment to the associated chest clinic. There are ample opportunities for the study of all forms of chest disease and general medical cases.

Applications, stating age, qualifications and experience, with the names of 2 referees, to be sent to the Medical Superintendent.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in the Acute Geriatric Unit (70 Beds/for assessment and rehabilitation) supervised by a Consultant Physician specialising in geriatrics. The appointment offers excellent clinical experience in the diagnosis and treatment of acute and other illnesses in the elderly, and will be for 2 years in the first instance.

Applications, stating age, qualifications and experience, with the names of 2 referees, to be sent to the Medical Superintendent.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (232 Beds.) HOUSE SURGEON to Orthopædic and Traumatic Unit. The post is tenable for 6 months from 1st March, is recognised for the F.R.C.S. examination, and is open to pre-registration candidates.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary as soon as possible.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. HOUSE SURGEON (pre-registration).

Applications, mentioning 2 names for reference, should be sent to the Hospital Secretary at once.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of HOUSE SURGEON (general, gynæcology and obstetrics—first or second post). Recognised under F.R.C.S. regulations, pre-registration post. Duties to commence 7th February, 1955.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered or registered medical practitioners for the post of HOUSE PHYSICIAN, to commence duties on 1st March, 1955. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE HOUSE SURGEON required to commence duty on 1st February, 1955. The post is recognised as a pre-registration appointment. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HULL. KINGSTON GENERAL HOSPITAL. (444 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN (recognised pre-registration appointment). Salary £425, £475, or £525 according to experience. The post is resident and tenable for 6 months. Vacant 1st March, 1955.

Applications, with full particulars, to the Hospital Secretary.

ILFORD. KING GEORGE HOSPITAL. There will be a vacancy for a SENIOR HOUSE OFFICER ANÆSTHETIST at the above Hospital on 12th February, 1955. The Officer appointed will be required to be available for duty in other hospitals in the Group. Salary will be at the rate of £745 p.a., less £145 p.a. emoluments.

Applicants should have been registered not less than 1 year and should send applications, accompanied by copies of 3 testimonials, to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

IPSWICH BOROUGH GENERAL HOSPITAL, Heath-road, IPSWICH. (270 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Fracture and Orthopædic Department). The post, which becomes vacant on 3rd March, 1955, is normally of 1 years duration. It is recognised as part of the necessary surgical experience for the Final F.R.C.S.

Applications, stating age, qualifications and experience, together with recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOS-PITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the E.N.T. and Ophthalmic Departments. The post is recognised for pre-registration and for the D.L.O. examination.

Applications, giving full particulars and copies of recent testimonials, to the Hospital Secretary.

IPSWICH. FOXHALL HOSPITAL. (102 Beds for chest diseases.) SENIOR HOUSE OFFICER required for duties in surgical and medical wards. Hospital is fully equipped for all forms of investigation and treatment of pulmonary tuberculosis and other chest diseases, including major thoracic surgery. Experience of management of thoracic surgical cases an advantage but not essential. A flat or unfurnished bungalow is available. Further information from Dr. G. R. McNab, Physician-Superintendent. The post is now vacant.

Applications, including the names of 3 referees, to the Secretary, Ipswich Group Hospital Management Committee at East Suffolk and Ipswich Hospital, Anglesea-road, Ipswich.

LANCASTER MOOR HOSPITAL, Lancaster. (Regional MENTAL HOSPITAL.) Locum JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female) required immediately. Salary £17 10s. per week, less charges for residential accommodation, &c.

Apply Medical Superintendent.

LANCASTER MOOR HOSPITAL, Lancaster. (Regional MENTAL HOSPITAL.) Applications invited for post of RESIDENT or NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female) on a tenure of 4 years : preference to candidates who have held house appointments at general hospitals. Previous experience in psychiatry not essential. Unfurnished flat in Hospital grounds for married applicants if required ; furnished quarters for single persons. Modern methods of investigation and treatment carried out. Out-patient clinics (3) at hospitals in the area, staffed from Hospital.

Applications, stating age, qualifications and experience, and names of 2 referees, to be sent to the Medical Superintendent.

LEEDS, 2. PUBLIC DISPENSARY AND HOSPITAL. LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER (Senior House Officer) at the above Hospital. The appointment will be for a period of 1 year. Salary in accordance with the agreed terms and conditions of service of hospital medical and dental staffs, with an appropriate deduction in respect of board, lodging, &c.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

General Medicine

(*a*) Halifax Group (110 general medical, 380 geriatric beds). Duties divided equally between general medicine and geriatrics. (Non-resident but accommodation may be arranged for a single man.)

(*b*) Regional Rheumatism Centre, Harrogate (240 Beds) (9 sessions), and the Rheumatism Clinic, General Infirmary at Leeds (2 sessions). Resident at Royal Bath Hospital, Harrogate.

General Surgery

Hull A Group, mainly at Western and Kingston General Hospitals (150 general surgical beds) (resident or non-resident). Recognised for F.R.C.S.

Obstetrics and Gynæcology

Hull A Group (84 obstetric and 74 gynæcological beds). Recognised for M.R.C.O.G. (resident or non-resident).

Orthopædic Surgery

Hull A Group (50 orthopædic beds), Hull B Group and East Riding Group (50 orthopædic beds) (non-resident). Includes some duties in the Casualty Department at the Hull Royal Infirmary.

Psychiatry

Oulton Hall Hospital, near Wakefield, and affiliated Mental Deficiency Colonies (aggregating 780 beds) (non-resident). Facilities for attendance at the Leeds University will be provided if the successful candidate is studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 10th February, 1955.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. RESIDENT AURAL OFFICER required. The post is graded Senior House Officer and the salary £745 p.a.

Applications, giving details of age, qualifications, previous posts with dates, and 3 names for reference, should be sent to the Secretary to the Board as soon as possible.

LEICESTER ROYAL INFIRMARY. (507 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (ophthalmology) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 7th February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LIVERPOOL. BOOTLE HOSPITAL. A vacancy exists for a SENIOR HOUSE SURGEON (general surgery) at Bootle Hospital, from 1st April, 1955.

Applications to Secretary, North Liverpool Hospital Management Committee, Walton Hospital, Liverpool, 9.

LIVERPOOL, 14. BROADGREEN HOSPITAL. Applications are invited from registered medical practitioners for appointment as SENIOR HOUSE OFFICER in the Regional Thoracic Surgical Unit, tenable for a period of 6 months from 1st March, 1955. The salary will be £745 p.a., less £130 p.a. in respect of residential emoluments.

Applications, on forms obtainable from the undersigned, to be returned completed within 10 days of this advertisement.

H. BLYTHE, Group Secretary.

LIVERPOOL, WALTON HOSPITAL. Applications are invited for a post as SENIOR HOUSE OFFICER in Neuro-surgery, vacant on 1st February, 1955.

Applications on forms available from Physician-Superintendent, Walton Hospital, Liverpool, 9.

MACCLESFIELD. PARKSIDE MENTAL HOSPITAL. (1650 Beds.) Applications are invited from suitably qualified medical practitioners for the whole-time post of JUNIOR HOSPITAL MEDICAL OFFICER (psychiatric). Terms and conditions of service of hospital medical and dental staffs only. Accommodation available for a single person. The appointment in the first place will be for a period of 4 years but reapplication may be made by the successful applicant at the end of this period. Preference will be given to candidates having previous general hospital experience. All modern methods of investigation and treatment are carried out, facilities for attending the course for the D.P.M. at Manchester University will be granted and the Hospital is recognised by the Conjoint Board for the purposes of the D.P.M.

Applications, giving age, nationality and full details, with the names of 3 referees, to be sent to the Medical Superintendent as soon as possible.

MAIDSTONE (near). LENHAM SANATORIUM. Mid-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from practitioners, with at least 1 years experience after full registration, for the appointment of RESIDENT ASSISTANT PHYSICIAN at Lenham Sanatorium, near Maidstone. Previous experience in tuberculosis not essential. Post vacant February, 1955. The Sanatorium has 168 Beds ; is visited by Thoracic Surgeons ; is 1¼ hours travelling distance from London. Salary according to experience within the scale £775–£50–£1075 a year, with a deduction of £150 for residential emoluments. Appointment for 12 months in the first instance.

Applications, with the names and addresses of 2 referees, to the Physician-Superintendent, Lenham Sanatorium, near Maidstone (Telephone No. Lenham 314).

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING ROOM OFFICER. Post vacant January, 1955. Salary £745 a year, with a deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MANCHESTER REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (resident). Post vacant end of April, Birch Hill Hospital, Rochdale. Post recognised for D.A. and tenable for 1 year in first instance.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for a post of SURGICAL REGISTRAR (resident of non-resident) at the North Lonsdale Hospital, Barrow-in-Furness. Post recognised for F.R.C.S.

Applications to Group Secretary, Barrow and Furness Hospital Management Committee, 52, Paradise-street, Barrow-in-Furness, not later than 5th February, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR in Pathology in the Wigan and Leigh Hospital Management Committee Group Laboratory established at the Royal Albert Edward Infirmary, Wigan. Post vacant 1st March, 1955. The Laboratory is well equipped and recognised for the D.Path. There are excellent opportunities for gaining extensive experience in all branches of pathology.

Applications, with full particulars, and names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee Knowsley House, Wigan-lane, Wigan.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER post. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade), vacant 1st March, 1955. Candidates must have held house appointments but previous laboratory experience is not essential. The duties will consist of routine work in the Department of Clinical Pathology, mainly at Saint Mary's Hospitals, but the holder of the post will also spend some time in the Manchester Royal Infirmary.

Application to be made on forms obtainable from the undersigned. A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

NOTTINGHAM AND MIDLAND EYE INFIRMARY. Required, SENIOR HOUSE OFFICER, duties to commence as soon as possible. Salary and conditions of service in accordance with Ministry regulations.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (orthopædic and fracture). The post offers exceptional experience in traumatic surgery. Duties to commence as soon as possible.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Resident House SURGEON (pre-registration first or second post) required for 14th March, 1955, for 6 months. Recognised for F.R.C.S.

Applications, stating age, qualifications and experience, to be sent to the Secretary.

NOTTINGHAM HIGHBURY HOSPITAL. Senior SURGICAL HOUSE OFFICER required at the above Hospital. Good opportunity for obtaining experience in all types of general surgery. Duties to commence on 1st March, 1955.

Applications, stating age, qualifications and experience, together with copies of testimonials to be sent to Group Secretary, Nottingham General Hospital.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the whole-time non-resident appointment of REGISTRAR in the Department of Radiology. Candidates should possess a recognised Diploma in Radiology or hold the M.R.C.P. or F.R.C.S. The appointment is for 1 year in the first instance tenable at the Royal Victoria Infirmary, and if an extension of 1 year is granted the appointee may be required to undertake duty in a hospital under the Newcastle Regional Hospital Board. The appointment will be subject to terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the date of appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE GENERAL HOSPITAL. (847 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. DEPARTMENT OF NEUROLOGICAL SURGERY. SENIOR HOUSE OFFICER (resident or non-resident). The post affords excellent experience in neurology and would be of value to candidates preparing for a higher qualification. No surgical work is involved, the duties being purely medical and no previous neurosurgical experience is required. The appointment is tenable for 12 months in the first instance.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials.

NEWCASTLE REGIONAL HOSPITAL BOARD. East CUMBERLAND GROUP OF HOSPITALS. REGISTRAR OBSTETRICIAN AND GYNÆCOLOGIST (resident). Main duties City Maternity and City General Hospitals and the Cumberland Infirmary, Carlisle. Post recognised for the M.R.C.O.G. Appointment for 1 year in the first instance.

Applications, with names of 3 referees, to the Senior Administrative Medical Officer, 72, Warwick-road, Carlisle, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Northallerton Hospital Management Committee

REGISTRAR ORTHOPÆDIC SURGEON (whole-time), resident.

Durham Hospital Management Committee

REGISTRAR ORTHOPÆDIC SURGEON (whole-time), married or single accommodation.

Tees-side Hospital Management Committee

REGISTRAR PATHOLOGISTS (2), whole-time, for Area Group Laboratory. Appointments offer unique opportunities for training in all branches of clinical pathology.

Newcastle Hospital Management Committee

REGISTRAR PATHOLOGIST (whole-time), single accommodation.

Regional Thoracic Service

REGISTRAR THORACIC SURGEON (whole-time), resident at Regional Centre (160 Beds), Shotley Bridge General Hospital, where work is almost entirely non-tuberculous (cardio-vascular, œsophageal and pulmonary), and at associated sanatoria. Higher qualification necessary and some experience in chest surgery an advantage. Appointment intended for trainee in thoracic surgery.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in Mental Deficiency (house or single quarters available). Royal Eastern Counties Hospital, Colchester, Essex (1700 Beds). Candidates must hold D.P.M. or equivalent. Full opportunities for experience and instruction in all aspects of mental deficiency. A proportion of duties will be in the hospital's fully equipped Research Department (Director: Dr. J. A. Fraser-Roberts). Further particulars on application. 4 years appointment, subject to annual review.

Applications in triplicate, with names of 2 referees, to Secretary, 11A, Portland-place, W.1, by 12th February, 1955.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for post of HOUSE SURGEON to Accident Service, Radcliffe Infirmary, for 6 months, with effect from 1st April, 1955 (45 Beds). Duties include 2 months head injuries, 2 months male and 2 months female and children's wards, in addition to Casualty Department.

Apply, stating age, qualifications and experience, together with names of 2 referees, to Administrator, Radcliffe Infirmary, Oxford, by 14th February.

PONTYPRIDD (near). EAST GLAMORGAN HOSPITAL CHURCH VILLAGE. (316 Beds and large Outpatient Department. Committee's Base Hospital serving population of 174,000. Recognised for Membership and D.Obst.R.C.O.G., F.R.C.S., D.C.H., F.F.A.R.C.S., D.A.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (obstetrics and gynæcology) (to include duties at the Llwynypia Hospital).

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd.

PONTYPRIDD (near). EAST GLAMORGAN HOSPITAL, CHURCH VILLAGE. (316 Beds and large Outpatient Department. Committee's Base Hospital serving population of 174,000. Recognised for F.R.C.S., M.R.C.O.G., D.Obst.R.C.O.G., D.C.H., F.F.A.R.C.S., D.A.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (surgical) (to include duties at the Porth and District Hospital).

Applications, stating age, qualifications, and expecience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd.

PURLEY AND DISTRICT WAR MEMORIAL HOSPITAL. (53 Beds.) RESIDENT MEDICAL OFFICER (Senior House Officer status) commencing 7th February for period of 6 months in first instance. Charge of £167 p.a. for board, lodgings, &c. There is no other Resident Medical Officer at Hospital but General Practitioner rota is in operation. Hospital comprises surgical, medical, obstetric and gynæcological beds, also a Casualty Department.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned immediately.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. SENIOR HOUSE OFFICER in Casualty, vacant 5th February, 1955.

Applications, stating age, nationality, qualifications, and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth.

South Devon and East Cornwall General Hospital Group, 7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY. PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. Applications invited from duly qualified and registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in Obstetrics and Gynæcology, vacant 1st April, 1955. There will be additional duties at the Flete Maternity Home, and the Alexandra Maternity Home, which are parts of the Department. Candidates should have had previous experience in a Department of Obstetrics and Gynæcology. The appointment will be for a period of 12 months. Salary £745 p.a. Terms and conditions of service are in accordance with the National Health Service terms. The post is recognised by the Royal College of Obstetricians and Gynæcologists for the Membership examination of the College.

Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 3 referees, should be sent to ARTHUR R. CASH, Group Secretary, 7, Nelson-gardens, Stoke, Plymouth.

PAISLEY AND DISTRICT HOSPITALS BOARD OF MANAGEMENT. ROYAL ALEXANDRA INFIRMARY, PAISLEY. JUNIOR HOSPITAL MEDICAL OFFICERS required for General Surgical Unit and Casualty Department at the above Infirmary. 6 months tenure.

Applications should be submitted to Group Medical Superintendent, Royal Alexandra Infirmary, Paisley, immediately.

PERTHSHIRE. BRIDGE OF EARN HOSPITAL. Applications are invited for the post of HOUSE SURGEON (General Surgical Unit), which will fall vacant in February, 1955. This post is recognised for Pre-registration Hospital Service, and by the Royal College of Surgeons under regulations for the F.R.C.S.

Applications, giving details of experience and names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments:—

GYNÆCOLOGICAL HOUSE SURGEON for duties at Queen Alexandra Hospital (50 gynæcological beds), vacant now. Post recognised for M.R.C.O.G. Pre-registration post. At the end of 6 months successful candidate would be offered post at St. Mary's Hospital, Portsmouth (50 obstetric, 40 gynæcological beds). Recognised for M.R.C.O.G. and D.Obst.R.C.O.G.

Royal Portsmouth Hospital

SENIOR HOUSE SURGEON (70 surgical beds), vacant 1st February, 1955.

HOUSE OFFICER in the Traumatic and Orthopædic Department (105 beds), vacant now.

HOUSE PHYSICIAN (65 medical beds), pre-registration post, vacant 17th February.

Saint Mary's Hospital

HOUSE PHYSICIAN (74 medical beds), pre-registration post, vacant 24th February.

HOUSE PHYSICIAN (pædiatric), vacant 16th February. Pædiatric Unit of 53 Beds, and the post is recognised for candidates preparing for the D.C.H.

Infectious Diseases Hospital (310 Beds—Fever and T.B.)

SENIOR HOUSE OFFICER, vacant 1st May.

Applications, stating age, experience and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS, 35, Grove-road South, Southsea.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of PÆDIATRIC REGISTRAR (non-resident) to the Portsmouth Group of hospitals. The holder of this appointment will be responsible for 70 pædiatric beds and will also have the oversight of newly born babies in a big maternity unit. Previous experience in diseases of children is essential and preference will be given to candidates holding the M.R.C.P. or D.C.H. Duties to commence 26th March, 1955.

Forms of application may be obtained from the Acting Group Secretary, Portsmouth Group Hospital Management Committee, 35, Grove-road South, Southsea, which should be returned to him, duly completed, on or before 7th February, 1955. Candidates may visit the Hospitals in the Group by arrangement with the Acting Group Secretary.

REDHILL COUNTY HOSPITAL, Earlswood Common, REDHILL. REGISTRAR in Obstetrics and Gynæcology. Whole-time 2-year resident appointment. Post recognised for M.R.C.O.G., in unit of 52 maternity, 26 gynæcological beds. Married quarters available.

Application forms from Group Secretary, Redhill Hospital Management Committee, Earlswood Mount, Redhill, Surrey. *Amended advertisement, existing applicants need not re-apply.*

RICHMOND, SURREY. CASSEL HOSPITAL FOR FUNCTIONAL NERVOUS DISORDERS. (GROUP 51.) SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR. Candidates must have completed a general psychiatric training and possess experience in psychotherapy. It is desirable for the successful applicant to undergo a personal analysis if he has not already done so. An unfurnished house is available. Applicants ma visit the Hospital by appointment.

Application forms may be obtained from the undersigned and should be returned to the Secretary within 14 days of this advertisement.

D. MALLION, Secretary,
Cassel Hospital Management Committee.

Ham Common, Richmond, Surrey.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered and provisionally registered medical practitioners (Male or Female), for the resident post of JUNIOR HOUSE PHYSICIAN (pædiatric and E.N.T.), vacant 15th March, 1955, for 6 months.

Write, stating age, qualifications with dates, nationality, together with 1 copy of recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered and provisionally registered medical practitioners (Male or Female) for the resident post of JUNIOR HOUSE SURGEON (E.N.T.), vacant 21st February, 1955. Salary £425–£525 p.a., less £125 board-residence.

Write, stating age, qualifications with dates, nationality, with copy of 1 recent testimonial, to Secretary.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER in the Area Department of Diseases of the Chest, for duty in the Reading Chest Clinic. Starting salary within the scale will be fixed by agreement with Ministry of Health, according to qualifications and experience.

Applications, stating age, and qualifications, together with names of 3 referees, should be sent to the Group Secretary at 3, Craven-road, Reading.

READING. BATTLE HOSPITAL. (374 Beds.) Applications are invited from registered and provisionally registered medical practitioners for post of RESIDENT JUNIOR HOUSE SURGEON in the Area Accident and Orthopædic Department, vacant 1st March, 1955. F.R.C.S. recognised. Also casualty duties. Salary £425–£525 p.a., less £125 board-residence.

Apply, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (603 Beds.) Applications are invited for RESIDENT SENIOR HOUSE OFFICER (surgery). Post recognised for F.R.C.S. and vacant 1st March, 1955.

Applications, stating age, &c., to be sent to the undersigned by 11th February, 1955. J. C. FIELD, Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER in Pathology required in this large general hospital containing well-equipped laboratory where excellent opportunities exist for gaining extensive experience.

Applications should be sent immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT HOUSE SURGEONS (2) required from 23rd February, 1955, in the General Surgical Unit at the above Hospital. Recognised for F.R.C.S. Open to either pre-registration applicants or to fully qualified practitioners. This very active general surgical unit of approximately 100 beds affords ample opportunity for candidates to obtain first-class tuition and experience.

Applications should be forwarded immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required in the Orthopædic and Accident Unit. The service consists of 100 beds equally divided between traumatic surgery and "cold" orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Hospital Management Committee, Oldchurch Hospital, as early as possible.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE OFFICER (general surgery) required from 1st March, 1955. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications should be forwarded immediately to Medical Superintendent, stating also names of 2 referees.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE PHYSICIAN required from 6th March, 1955. This Hospital provides for acute medical and surgical patients in addition to a limited number of fever cases. The post, which is also open to pre-registration candidates, offers good opportunities for gaining experience in both general medicine and fevers.

Applications should be addressed immediately to Medical Superintendent, stating also names of 2 referees.

ROTHERHAM. OAKWOOD HALL SANATORIUM (102 Beds) AND THE CHEST CLINIC. SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (chest diseases) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospita Board, Old Fulwood-road, Sheffield, by 7th February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHREWSBURY. EYE, EAR AND THROAT HOSPITAL. SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (E.N.T.), vacant immediately. Duties at E.N.T. Hospital (68 Beds) and Copthorne Hospital (168 Beds). Post recognised for the D.L.O.R.C.S.

Applications, with copy testimonials, to the Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. GYNÆCOLOGICAL HOUSE SURGEON. 50 gynæcological beds and 2 House Surgeons. Post recognised for M.R.C.O.G. Vacant 14th March, 1955.

Applications, with copy testimonials, to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. JESSOP HOSPITAL FOR WOMEN. Applications invited from registered medical practitioners for the resident post of SENIOR HOUSE OFFICER (obstetrics) at the above Hospital from 1st April, 1955.

Applications, stating age, qualifications, and experience, together with 3 recent testimonials, should be forwarded immediately to the Superintendent, Jessop Hospital for Women, Leavygreave-road, Sheffield, 3.

SHEFFIELD CHEST SERVICE. Sheffield Regional HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (chest diseases) required with duties mainly at the Crimicar Lane Sanatorium, Sheffield. Post becomes vacant 1st April, 1955. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 7th February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Supernumary SENIOR REGISTRAR in General Medicine required for the Derbyshire Royal Infirmary from 1st April, 1955. Duties will be divided approximately equally between clinical work and clinical research. Candidates will be required to submit, in outline, proposals for the research project they wish to pursue. The tenure of this appointment will be for 1 year in the first instance.

Further details and application forms obtainable from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Completed forms to be returned by 7th February, 1955.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR REGISTRAR in Radiology required on 12th April for approximately 9 notional half-days per week at the City General Hospital, Sheffield, and approximately 2 notional half-days per week at the Barnsley Hospitals. Candidates should hold a Diploma in Diagnostic Radiology. Appointment for 1 year in the first instance reviewable annually. It has been agreed between the Sheffield Regional Hospital Board and the Board of Governors of the United Sheffield Hospitals that subject to satisfactory work and progress the tenure of the appointment will be divided between the City General Hospital, Sheffield and Barnsley Hospitals and the Teaching Hospitals of the United Sheffield Hospitals.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 7th February, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SALFORD ROYAL HOSPITAL. Salford Hospital Management COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to the Urological Department, vacant February. The position, which offers a wide experience in urology, is recognised for the F.R.C.S. and is tenable for 6 or 12 months. Charge £140 for board and lodging.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Salford Royal Hospital, Salford, 3, Lancs.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Orthopædics. BRIDGE OF EARN HOSPITAL, PERTHSHIRE. (806 Beds.) Applications are invited for the post of REGISTRAR in Orthopædic Surgery at the above Hospital (220 orthopædic beds). Higher surgical qualifications and previous experience in orthopædics essential.

Further particulars and forms of application from the Secretary to the Board, "Bracknowe," 430, Blackness-road, Dundee, with whom applications should be lodged not later than 12th February, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR HOUSE OFFICER (Male or Female), now vacant in the Psychiatric Unit at Stobhill Hospital, Glasgow. The appointment is resident and will be for 1 year in the first instance. The unit consists of 180 beds with 1200 admissions yearly and deals with acute treatable cases; it is recognised for the D.P.M.

Applications, stating age, qualifications, experience, and present appointment, and naming 3 referees, to be lodged immediately with the Secretary, Board of Management for Glasgow Northern Hospitals, 13, Woodside-place, Glasgow, C.3.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time SENIOR REGISTRAR in Plastic Surgery to fill a vacancy in the approved trainee establishment at the Tunbridge Wells Group of hospitals, for duty in the Plastic Surgery and Jaw Injuries Centre at the Queen Victoria Hospital, East Grinstead. Candidates should have had general surgical experience and be Fellows of a Royal College of Surgeons. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 3 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 12th February, 1955.

STOCKPORT INFIRMARY. Stockport and Buxton HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics), vacant 16th February, 1955. The post may be resident or non-resident (preferably resident) and is recognised for the D.A. and F.F.A.R.C.S. There are facilities for study.

Applications, stating age, experience, and qualifications, together with copies of 2 testimonials, to be addressed to the Group Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, immediately.

ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. The following Resident House Officer posts become vacant on 1st March :—

St. Helens Hospital (196 Beds)
HOUSE SURGEON.

Whiston Hospital, Prescot (892 Beds)
HOUSE PHYSICIAN.
HOUSE SURGEON (general).
HOUSE SURGEON (orthopædic).

All the above posts are recognised for Pre-registration Service.

Applications, stating age, date of qualification and experience, and giving 2 names for reference, should be forwarded to the Secretary, Group Office, Whiston Hospital, Prescot, immediately

STAFFORD HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics), Male or Female. Recognised for D.A. Duties mainly at General Infirmary, Stafford (175 Beds), which is the main and acute general hospital of the Group.

Applications, with copies of 3 testimonials, to the Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds—32 Recovery Unit.) HOUSE SURGEON (Male or Female). Post or pre-registration candidates considered. Post vacant now.

Applications, giving full particulars and copies of 3 recent testimonials, to the Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

VENTNOR, ISLE OF WIGHT. ROYAL NATIONAL HOSPITAL FOR DISEASES OF THE CHEST. (249 Beds.) Required, SENIOR or JUNIOR HOUSE OFFICER (resident post), vacant 24th March. Hospital has all facilities for major thoracic surgery.

Applications, with names of 2 referees, to Physician-Superintendent.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. HOUSE SURGEON (general surgery and orthopædics) required at the above Hospital for period 1st February, 1955–30th April, 1955. Salary and conditions of service in accordance with national recommendations.

Applications to the Group Secretary at the above address.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. HOUSE SURGEON (general surgery, gynæcology and dental) required at the above Hospital. Salary and conditions of service in accordance with national recommendations.

Applications to the Group Secretary at the above address.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. HOUSE PHYSICIAN (general medicine and dermatology) required at the above Hospital for period 1st March, 1955–30th April, 1955. Salary and conditions of service in accordance with national recommendations.

Applications to the Group Secretary at the above address.

WAKEFIELD. THE GENERAL HOSPITAL, Park Lodge-lane. (158 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. RESIDENT SURGICAL OFFICER (Senior House Officer grade) required at the above Hospital. Salary and conditions of service in accordance with national recommendations.

Applications should be made to the Group Secretary, Clayton Hospital, Wakefield.

WELSH REGIONAL HOSPITAL BOARD.

NON-RESIDENT REGISTRAR (anæsthetics) to serve Caernarvon and Anglesey Hospital Management Committee Group. Successful applicant based at Caernarvon and Anglesey General Hospital, Bangor, and will work at other hospitals in Group. Post recognised for F.F.A.R.C.S.

REGISTRAR (general surgery), Pembroke County War Memorial Hospital, Haverfordwest (resident or non-resident).

SURGICAL REGISTRAR (plastic surgery), St. Lawrence Hospital, Chepstow. Expected to visit other hospitals in South Wales area. Considerable opportunities for training in specialty. Accommodation for single person.

NON-RESIDENT REGISTRAR (general medicine) to serve Newport and East Monmouthshire Hospital Management Committee. Successful candidate based at Royal Gwent Hospital, Newport (260 Beds). Expected to serve other hospitals in Group.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD. Registrar (anæsthetics), Mid Glamorgan Hospital Management Committee, based at Neath General Hospital, Glam. (412 Beds). Hospital recognised for D.A. Resident or non-resident. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WHITEHAVEN HOSPITAL, Cumberland. (115 Beds. Pre-registration post, recognised F.R.C.S.(Ed.).) HOUSE SURGEON (first, second or Senior House Officer post), vacant mid-March.

Detailed applications, with dates and copies of 2 testimonials, to Secretary, Workington Infirmary, Cumberland.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. 2 HOUSE SURGEONS (pre-registration posts). Recognised F.R.C.S. 1st vacant 7th February (casualty duties), 2nd vacant 21st February (general duties).

Applications, together with names of 2 referees, to Secretary, Wigan Infirmary.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for the post of RESIDENT CASUALTY OFFICER (Male or Female). The post is graded Junior Hospital Medical Officer. Scale of salary £775–£50–£1075, less a deduction of £130 for residential emoluments. Applications will also be considered from Junior Medical Officers who would be graded House Officer or Senior House Officer at the scale appropriate to the experience of the applicant. Consideration will also be given to applicants who desire the appointment on a short-term basis. A whole-time Senior Hospital Medical Officer is in charge of the Department.

Applications, stating age, experience, and qualifications, should be forwarded or telephoned to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs
(Tel. No. Warrington 1666).

WARRINGTON INFIRMARY. Applications are invited from qualified practitioners for the vacancy of RESIDENT ANÆSTHETIST (Senior House Officer grade), Male or Female, at the Warrington Infirmary. The Infirmary is recognised for the D.A. examination. Scale of salary £745 p.a., less £130 p.a. for residential emoluments.

Applications to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for a vacancy at the above Hospital for a RESIDENT HOUSE SURGEON (Male or Female). Recognised for pre-registration. Salary will be £425–£525 p.a., less a deduction of £125 for full residential emoluments.

Applications should be sent to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited for the post of HOUSE SURGEON (Male or Female) at the above Hospital, recognised for pre-registration, commencing on 23rd February, 1955. National Health Service terms and conditions. The staffing of the Surgical Unit consists of a Senior Registrar, Registrar, and 2 House Surgeons. The post offers a comprehensive training in surgery.

Apply, giving full particulars, to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WOLVERHAMPTON GROUP.
New Cross Hospital, Wolverhampton

HOUSE OFFICER (general surgery). Pre-registration post. Vacant 28th February.

Applications, with copies of 3 recent testimonials, to be sent to Group Secretary, The Royal Hospital, Wolverhampton.

WORCESTER PARK, SURREY. MASS RADIOGRAPHY UNIT. ASSISTANT MEDICAL OFFICER (Registrar grade). The appointment is whole-time, 7/11ths being devoted to duties with the Surrey Mass Radiography Unit as Assistant Medical Director, and 4/11ths to Chest Clinics in the Woking, Weybridge and Egham areas, under the supervision of the Consultant Chest Physician. Possession of car necessary for travel between Units: travelling allowance payable at normal rates. Candidates may visit these units by local arrangement.

Forms of application, returnable by 12th February, may be obtained from the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

WORCESTER (near). POWICK HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident). The post offers experience in all branches of psychiatry, including all forms of modern treatment and outpatient clinics. The Hospital has a high admission-rate, is recognised for the D.P.M., and has associated Child Guidance Clinics and a Mental Deficiency Institute similarly recognised. Arrangements are made for Medical Officers to attend at the Birmingham Medical School for instruction in neurology.

Applications, with full details and the names of 2 referees, to be forwarded to the Medical Superintendent.

WORCESTER ROYAL INFIRMARY. Applications invited for post of HOUSE SURGEON (pre-registration or otherwise), now vacant.

Applications, with testimonials, to the Secretary.

WREXHAM. MAELOR GENERAL HOSPITAL. (591 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WREXHAM. WAR MEMORIAL HOSPITAL. (230 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.
Broadgate (Mental) Hospital, Beverley, Yorkshire
(650 Beds)

JUNIOR HOSPITAL MEDICAL OFFICERS (2) required now. Time for studying. Salary £775–£50–£1075.

Detailed applications to Group Secretary, Westwood Hospital, Beverley.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.
Westwood Hospital, Beverley, Yorks. (207 Beds.)

HOUSE SURGEON (first, second, or third post), vacant mid-February. General surgical duties some orthopædics. Offering good opportunity for general experience in busy acute General Hospital. Recognised for F.R.C.S. Approved pre-registration post. Fully-qualified practitioners may apply.

Apply Group Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) HOUSE PHYSICIAN to the Paediatric Department, vacant 18th March. Preference will be given to applicants wishing to specialise in paediatrics. The department is recognised for the D.C.H.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) HOUSE OFFICER (anæsthetics). Post vacant 7th March. The Hospital is recognised for the F.F.A. R.C.S. and D.A.

Applications, with copies of 2 testimonials, to the Secretary.

BALTIMORE, MARYLAND, U.S.A. FRANKLIN SQUARE HOSPITAL. ROTATING INTERNSHIPS available. Fully approved, Council on Medical Education, American Medical Association.

Applications to Franklin Square Hospital, Baltimore 23, Md, U.S.A.

BRITISH COLUMBIA. CHILDREN'S HOSPITAL, 250, West 59th-avenue, VANCOUVER 15, BRITISH COLUMBIA, CANADA. 2 PÆDIATRIC RESIDENTS required for a period of 1 year, commencing 1st July, 1955, for 83-Bed children's general hospital. University teaching programme. Accommodation available. Remuneration $175 per month, less $15 per month accommodation. Meals available if required.

Applications, stating age, qualifications, nationality, accompanied by recent references and photograph, should be forwarded by air-mail to the Administrator.

B.W.I. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES. Applications are invited for the post of SENIOR REGISTRAR in the Department of Diagnostic Radiology at the above-named Teaching Hospital which is in special relationship with the University of London. Preference will be given to candidates holding a Diploma in Diagnostic Radiology. The appointment will be for 1 year in the first instance, subject to renewal. Salary will be in the scale £1000–£100–£1400 p.a., depending on experience and qualifications. Single accommodation and board or a limited number of unfurnished flats for unmarried or married officers, are provided at a deduction of £125 p.a. or 5% of salary, respectively. Return first-class passage by sea will be paid for 1 person only.

Further information may be obtained from the Hospital Manager and Secretary, University College Hospital, Mona P.O., Jamaica, B.W.I., to whom applications, stating age, nationality, and details of qualifications and experience, together with 3 recent testimonials or the names and addresses of 3 referees and including the approximate date on which the candidate could become available, should be sent by 28th February, 1955.

B.W.I. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES Applications are invited for 2 posts of REGISTRAR or SENIOR REGISTRAR in the division of surgery at the above-named Teaching Hospital which is in special relationship with the University of London. Applicants should possess a higher qualification in surgery. The successful candidates will be required to assume duties as soon as possible after 15th March and 1st June, 1955. The appointments will each be for 1 year in the first instance, subject to renewal. Salary is payable within the scale £800–£100–£1000/£1100–£100–£1400 p.a., depending on experience and qualifications. Single accommodation and board or a limited number of unfurnished flats for unmarried or married Officers, are provided at a deduction of £125 p.a. or 5% of salary, respectively. Return first-class passage by sea will be paid for 1 person only in each case.

Further information may be obtained from the Hospital Manager and Secretary, University College Hospital, Mona P.O., Jamaica, B.W.I., to whom applications, stating age, nationality and details of qualifications and experience, together with 3 recent testimonials or the names and addresses of 3 referees, should be sent by 28th February, 1955.

B.W.I. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES. Applications are invited for the post of REGISTRAR in the Division of Medicine at the above-named Teaching Hospital which is in special relationship with the University of London. Higher qualifications desirable but not essential. The successful candidate will be required to be in Jamaica as early as possible after appointment. The appointment will be for 1 year in the first instance, subject to renewal. Salary is payable within the scale £800–£100–£1000/£1100–£100–£1400 p.a., depending on experience and qualifications. Single accommodation and board, or a limited number of unfurnished flats for unmarried or married Officers, are provided at a deduction of £125 p.a. or 5% of salary, respectively. Return first-class passage by sea will be paid for 1 person only.

Further information may be obtained from the Hospital Manager and Secretary, University College Hospital, Mona P.O., Jamaica, B.W.I., to whom applications, stating age, nationality and details of qualifications and experience, together with 3 recent testimonials or the names and addresses of 3 referees, should be sent by 28th February, 1955.

U.S.A. ST. ELIZABETH HOSPITAL, Elizabeth, N.J., U.S.A. (250 Beds.) Applications are invited to fill vacancies for 2 INTERNS to serve for 1 year. Hospital approved by A.M.A. Intern training being conducted. Salary $100 plus maintenance.

Apply Administrator.

Public Appointments

BERKSHIRE COUNTY COUNCIL. Wallingford and WANTAGE DISTRICTS JOINT PUBLIC HEALTH COMMITTEE. Applications are invited for the appointment of MEDICAL OFFICER OF HEALTH AND ASSISTANT COUNTY MEDICAL OFFICER from medical practitioners with a Diploma in Public Health. The area covered by the appointment comprises the Borough of Wallingford, the Urban District of Wantage, and the Rural Districts of Wallingford and Wantage. Salary £1368 15s.–£1687 10s. p.a. Travelling allowance of £210 p.a. Housing accommodation available within the Borough of Wallingford if required.

Further particulars and form of application can be obtained from the Clerk of the Joint Committee, 60, Bath-street, Abingdon, Berks, (stamped addressed envelope required), and applications must be returned by Wednesday, 16th February, 1955. G. V. SPOONER, Clerk of the Joint Committee.

E. R. DAVIES, Clerk of the Berkshire County Council.

DONEGAL COUNTY COUNCIL. Appointment of Temporary MEDICAL OFFICER at Lifford Hospital. The latest date for receipt of completed application forms for the above post has been extended to Thursday, 17th February, 1955. (*See Lancet, 22nd January, 1955, p. 56.*)

DUBLIN. LOCAL APPOINTMENTS COMMISSION. Medical position vacant. RADIOLOGIST, Monaghan County Council. Salary £1975.

Application forms and particulars from the Secretary, 45, Upper O'Connell-street, Dublin. Latest time for receiving completed application forms 5 P.M. on 18th February, 1955.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointment as Appointed Factory Doctor is vacant. Apply to Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
WADEBRIDGE ..	CORNWALL ..	12TH FEBRUARY, 1955

AMENDED NOTICE

GLOUCESTERSHIRE COUNTY COUNCIL. Applications are invited for the appointment of DEPUTY COUNTY MEDICAL OFFICER OF HEALTH AND DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER. The salary will be £1533 6s. 8d. p.a., rising by annual increments of £100 to £1833 6s. 8d. Candidates must be registered medical practitioners possessing the Diploma in Public Health. The appointment will be superannuable and the successful candidate must pass a medical examination. Candidates must be able to drive and possess a motor-car. Travelling and subsistence allowances payable on Council's scale.

Forms of application with particulars of duties and conditions of appointment may be obtained from the County Medical Officer of Health, Berkeley House, Berkeley-street, Gloucester, to whom completed applications should be sent not later than 4th February, 1955.

GUY H. DAVIS, Clerk of the County Council.

Shire Hall, Gloucester.

GOLD COAST LOCAL CIVIL SERVICE. Government OF THE GOLD COAST. MEDICAL OFFICERS with registrable qualifications are required for general duties including hospital and district work. Appointment will be to the Gold Coast Local Civil Service and may be made as follows :

(*a*) Contract for 2 tours of duty of 18–24 months with gratuity (taxable) at the rate of £37 10s. for each completed 3 months of service. Salary in the scale £1330–£2310 a year.

(*b*) On 3 years probation for permanent and pensionable employment. Pension (non-contributory) at the age of 45–55 is earned at the rate of 1/600th of the final pensionable emoluments for each completed month of service. Salary in the scale £1055–£1850 a year.

(*c*) Doctors in the National Health Service may resign from the National Health Service but retain their superannuation rights while in the Gold Coast (up to 6 years) and receive a gratuity (taxable) of 20% of their Gold Coast salary after their engagement. Salary in the scale £1055–£1850 a year.

Starting-point in salary scales is determined according to qualifications and experience.

Quarters are provided at rental not exceeding £150 a year. Income-tax at local rates. Free passages provided for Officer, wife, and up to 3 children under 13 years of age. Annual local leave is permissible and generous home leave is granted after each tour.

Application forms can be obtained from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/13/04).

HERTFORDSHIRE COUNTY COUNCIL. Assistant COUNTY MEDICAL OFFICER. Diploma in Public Health or Child Health desirable, but not essential. Salary £950–£50–£1300. Car necessary. Travelling and subsistence according to national scale.

Application forms and further particulars from County Medical Officer, County Hall, Hertford. Forms to be returned by 12th February.

PRISON AND BORSTAL SERVICE. Male Occupational THERAPIST (in sole charge) in the above Service. Applications are invited for a post at H.M. Prison Wakefield. Salary £455–£15–£515 p.a. (National Health Service scale). Pensionable under the Health Service superannuation scheme. Applicants must be fully qualified. The accepted candidate will be required to initiate and organise an Occupational Therapy Unit under the direction of the Principal Medical Officer. The unit will handle selected male prisoners suffering from psychopathic deviations mainly of a mild kind and will form part of his existing psychotherapeutic centre at Wakefield Prison.

Regulations and application forms from the Establishment Officer (E84/2/12), Prison Commission, Horseferry House, Dean Ryle-street, London, S.W.1, to be returned by 12th February, 1955.

FEDERATION OF RHODESIA AND NYASALAND. DEPARTMENT OF DEFENCE. A vacancy exists for a Male MEDICAL OFFICER in the Permanent Forces. The appointment, which is permanent and pensionable, will be in the rank of Captain, and the successful applicant, who must be British, under 35, will be required to attest in, and serve under, the conditions of service of the Rhodesia and Nyasaland Staff Corps. The scale applicable is £1269–£1668 p.a. with the following allowances : Professional, £200 p.a., for married officers, £180 p.a. where quarters are not provided, and children's allowances.

Duties : The Officer will be on the staff of the Director of Medical Services and his duties will include medical attention of Permanent Force Personnel and their dependants, which includes domiciliary visits and treatment in Government Hospitals, to which M.O.'s have full access. Previous experience of service medicine is desirable but not essential.

Application forms and further details from the Secretary, Rhodesia House, 429, Strand, W.C.2 ; completed forms to be returned by 15th February.

FEDERATION OF RHODESIA AND NYASALAND. FEDERAL MINISTRY OF HEALTH. Vacancies for GOVERNMENT MEDICAL OFFICERS. Applicants must be Male British subjects, preferably under 35. Government Medical Officers are essential general duty officers and have opportunities in practically all fields of medicine. These posts, which involve considerable change of stations and relieving duties during the first years of service, are best suited to young doctors who have completed 1–5 years of post-qualification experience and who are single or married without children. Starting salary £1200–£1400 depending on experience on scale rising to £1800 p.a. In addition, private practice is permitted or an allowance of £200 p.a. is payable in lieu.

Application forms and further details from the Secretary, Rhodesia House, 429, Strand, London, W.C.2; closing date 15th February.

LANCASHIRE COUNTY COUNCIL. Registered medical practitioners required for appointment of ASSISTANT DIVISIONAL MEDICAL OFFICERS in areas adjacent to Blackburn, Bolton/Bury, Lancaster, Leigh and Oldham. Possession of D.P.H. desirable. Salary £950–£1300 p.a. Travelling and subsistence allowances where applicable.

Application forms and further particulars from County Medical Officer of Health, East Cliff County Offices, Preston.

LIVERPOOL. CITY OF LIVERPOOL. Applications are invited for the appointment of SENIOR ASSISTANT MEDICAL OFFICER. Salary £1250–£50–£1450 p.a. The duties will be mainly in connection with the control of infectious diseases, vaccination and immunisation schemes, the medical assessment of housing cases, and such other work as the Medical Officer of Health may direct from time to time. Possession of D.P.H. is essential.

Applications stating age, qualifications and experience, together with the names and addresses of 3 persons to whom reference may be made, should reach the Medical Officer of Health, Gordon House, Belmont-grove, Liverpool, 6, not later than 10th February, 1955. The appointment is superannuable and subject to the Standing Orders of the City Council. Canvassing disqualifies. THOMAS ALKER, Town Clerk.

Municipal Buildings, Liverpool, 2 (JA 3804).

NORTHAMPTONSHIRE COUNTY COUNCIL. Applications are invited from registered medical practitioners holding a D.P.H. or similar qualification for the appointment of DISTRICT MEDICAL OFFICER OF HEALTH for the Urban Districts of Burton Latimer, Corby, Desborough and Rothwell and the Rural District of Kettering AND ASSISTANT COUNTY MEDICAL OFFICER for the same area. The Officer will act under the County Medical Officer of Health as Assistant County Medical Officer. The salary scales, which are based on an equal allocation of service between the County Council and the District Councils, will be in accordance with the awards of the Industrial Court—namely (i) for the post of Medical Officer of Health to the District Councils—£775 p.a. by 4 annual increments of £25 to £875 p.a., and (ii) Assistant County Medical Officer—£593 15s. p.a. by 7 annual increments of £31 5s. to £812 10s. p.a. A travelling allowance will be paid on the scale from time to time approved by the County Council. Office accommodation and clerical assistance will be provided. The appointment is subject to (*a*) the Local Government Act, 1933, and the Sanitary Officers (Outside London) Regulations, 1935 and 1951, (*b*) the Local Government Superannuation Acts, and (*c*) the passing of a medical examination. The Officer will be required to devote his whole time to the duties of the appointment, to reside within the area for which he acts and to discharge the obligations imposed on a District Medical Officer of Health by the relevant Acts, Orders and Regulations. As regards the duties of District Medical Officer of Health, the Officer will be subject to the control and direction of the several Councils. The appointment will be determinable upon 3 months notice on either side.

Applications, stating age, qualifications and experience, with the names of 3 referees, should reach the Clerk of the County Council by 15th February, 1955. Canvassing will disqualify.

J. ALAN TURNER, Clerk of the County Council.

County Hall, Northampton, 19th January, 1955.

YORKSHIRE. COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE. Joint appointment of SENIOR ASSISTANT COUNTY MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER to the Brighouse Corporation, the Elland Urban District Council and the West Riding County Council. Applications are invited from registered medical practitioners, Men or Women, for the above post. The Senior Assistant County Medical Officer and School Medical Officer will be on the staff of the County Medical Officer's Department but will work under the administrative direction of the Divisional Medical Officer and Medical Officer of Health, who is responsible for the day-to-day administration of practically all public health matters in the Division, and the post is suitable for Medical Officers who hold the D.P.H. and wish to obtain further experience in the field of public health. The duties of the office will be mainly clinical in the School Health and Infant Welfare Services, but in addition to these duties the person appointed will be required to act for the Divisional Medical Officer and Medical Officer of Health in his absence. The scale of salary is at present £1050 p.a., rising by annual increments of £50 to £1400 p.a. Travelling and subsistence allowances according to the County Council's scale are payable in addition to salary. The post is superannuable and the successful applicant will be required to pass a medical examination as to physical fitness.

Forms of application can be obtained from the undersigned to whom they should be returned not later than 12th February, 1955. J. WOOD-WILSON, County Medical Officer.

County Hall, Wakefield.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

STOKE-ON-TRENT EXECUTIVE COUNCIL. Applications invited for VACANCY, chiefly urban. List at present approximately 2160. Residence and surgery available. Apply on Form E.C.16A before 7th February, 1955, to—

W. E. WALKER, Stoke-on-Trent Executive Council.

80, High-street, Stoke-on-Trent.

LAGOS, WEST AFRICA. Locum (Male) required for 6 months in busy urban and commercial practice. Salary £100 per month and all found (includes return fare, full board with service, car). Possibility of permanency. Apply by air mail to "Locum," c/o Barclays Bank D.C.O., 55, Marina, Lagos, Nigeria.

Hospital Services: Non-Medical Appointments

DUMFRIES. CRICHTON ROYAL MENTAL HOSPITAL. There is a vacancy at above Hospital for a CLINICAL PSYCHOLOGIST holding a good Honours degree in Psychology, but not necessarily with previous clinical experience. The salary of not less than £415 p.a. will be in accordance with Whitley Council rates for Psychologists working in the Health Service.

Applications should be addressed in the first instance to JOHN C. RAVEN, M.SC., Crichton Royal Department of Psychological Research, 20, Castle-street, Dumfries.

Miscellaneous

To non-professional parts the Notification of Vacancies Order 1952 applies.

Applications are invited for the appointment of a Medical Officer with a leading British company in British West Africa. Applicants should not be more than 32 years of age, should have held a resident surgical post, and been employed in general practice. Tropical experience is desirable but not essential. Salary will be in accordance with age, experience and qualifications but will not be less than £1500 p.a. In addition, there are family allowances, free passages to and from West Africa, and free furnished quarters. Membership of the pension fund is compulsory. Tours of duty will be up to 21 months each followed by leave on full pay.—Applications should be made to Address No. 947, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Wanted at once, Assistant. Male. British. Experienced in anæsthetics including dental. Flat available. Midland group practice. Salary according to experience.—Address, No. 999, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Private Secretary, 24, S.R.N., C.M.B., with experience in business and medical practice, seeks interesting post.—B. PECOVER, 499, Green-lane, Goodmayes, Essex.

Young lady with 4 months experience in London training hospital requires post as Receptionist. Able to drive car.—Miss BRETT, 23, Seaforth-lodge, Barnes, S.W.13.

Surgeon seeks unfurnished Consulting Room with service in Doctor's house. W.1, but not in consulting rectangle.—Address, No. 996, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

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1. ACTA OBST. GYNEC. SCAND., 1950, *30*, suppl. 6.
2. BRIT. MED. J., 1954, *I*, 893.

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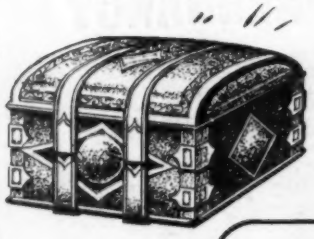

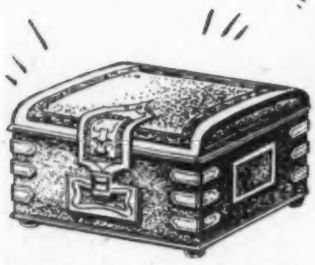

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